



Key Considerations for Nutrition Education Programs and Interventions for Individuals Experiencing Food Insecurity:

AN EVIDENCE REVIEW OF REACH, IMPLEMENTATION, ADOPTION, EFFECTIVENESS, MAINTENANCE AND EQUITY

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NUTRITION EQUITY
& JUSTICE PARTNERS, LLC

FEEDING
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About the Authors

Feeding America

Feeding America® is the largest hunger-relief organization in the United States. Through a network of more than 200 food banks, 21 statewide food bank associations, and over 60,000 partner agencies, food pantries and meal programs, we helped provide 5.2 billion meals to tens of millions of people in need last year. Feeding America also supports programs that prevent food waste and improve food security among the people we serve; brings attention to the social and systemic barriers that contribute to food insecurity in our nation; and advocates for legislation that protects people from going hungry.

Nutrition Equity and Justice Partners, LLC

Directed by Lead Consultant, Angela Odoms-Young, PhD, Nutrition Equity and Justice Partners, LLC (NEJP) is a public health consulting group that works with government agencies, healthcare organizations, non-profit organizations, and businesses to identify transformative and equitable solutions to reduce the high burden of chronic disease and improve population health. NEJP provides technical assistance and training in program planning and evaluation, intervention design, measurement/survey development, food/nutrition security, obesity prevention, community engagement/community capacity-building, and the social and structural determinants of health. NEJP has worked with several national and local clients including Feeding America, the National Center for Chronic Disease Directors, Feeding Pennsylvania, National WIC Association, and Illinois Public Health Institute.

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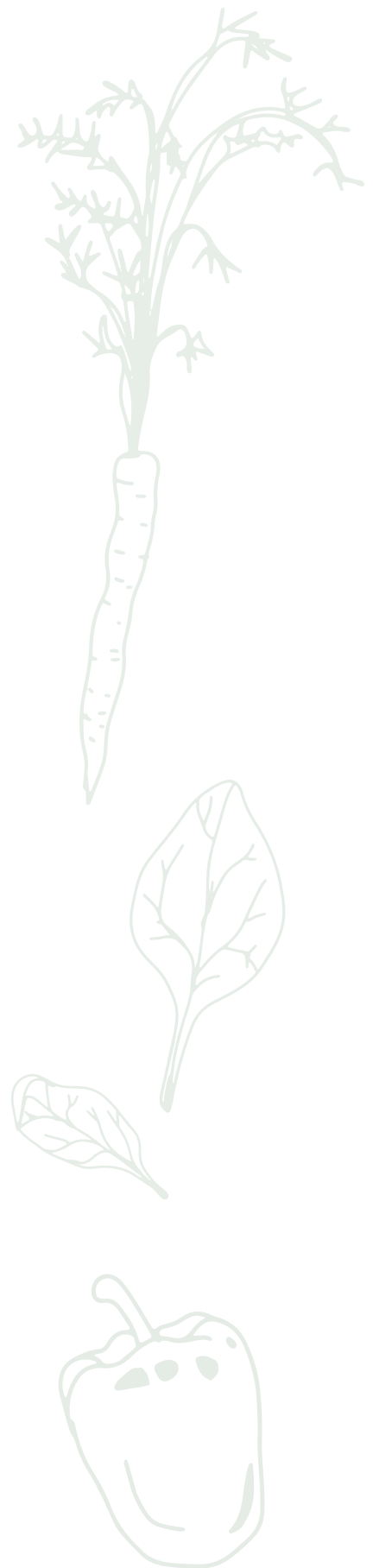
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I. Executive Summary

Nutrition is closely linked to optimal health and well-being, including supporting children's healthy growth and development, chronic disease prevention/management, and positive mental health. Income is a key driver of dietary quality, with low-income adults and children being more likely to have suboptimal intakes of fruits, vegetables, whole grains and low-fat dairy compared to their higher-income counterparts.^{1,2} Nutrition education has the potential to support healthy eating in low-income populations by helping individuals and families more effectively engage in food resource management, improve food choice, avoid food waste, and build skills in food storage, preservation and preparation.¹⁻³

For nearly two decades, food banks have partnered with community-based/service organizations and agencies to provide individuals access to nutrition education. More recently, many food banks have launched nutrition education efforts internally, hiring nutrition educators and health promotion specialists to provide instruction on various topics, including the Dietary Guidelines for Americans. Through a network of food banks, food pantries, and meal programs, the charitable food system has extensive reach and potential for scaling programs and initiatives nationally. Feeding America's nationwide network of 200 food banks and 60,000 food pantries and meal programs serves over 40 million people annually.

Using the RE-AIM framework with an equity lens, a guide for planning and evaluation of health promotion programs, the purpose of this review is to assess the existing evidence regarding the reach, efficacy, and impact of nutrition education efforts targeting adults experiencing food insecurity. Specific outcomes include intake of nutritious foods, diet quality, and related educational and behavioral outcomes. The current review is limited to a summary of the findings from intervention studies and programmatic evaluations published in the peer reviewed literature and academic reports. However, there is a nutrition education movement emerging from the field that has yet to be evaluated. Future efforts are needed to continually assess the landscape of intervention models which will help us further understand the capacity for nutrition education to promote healthy decision-making, valuable skill application and long-term health and wellness.

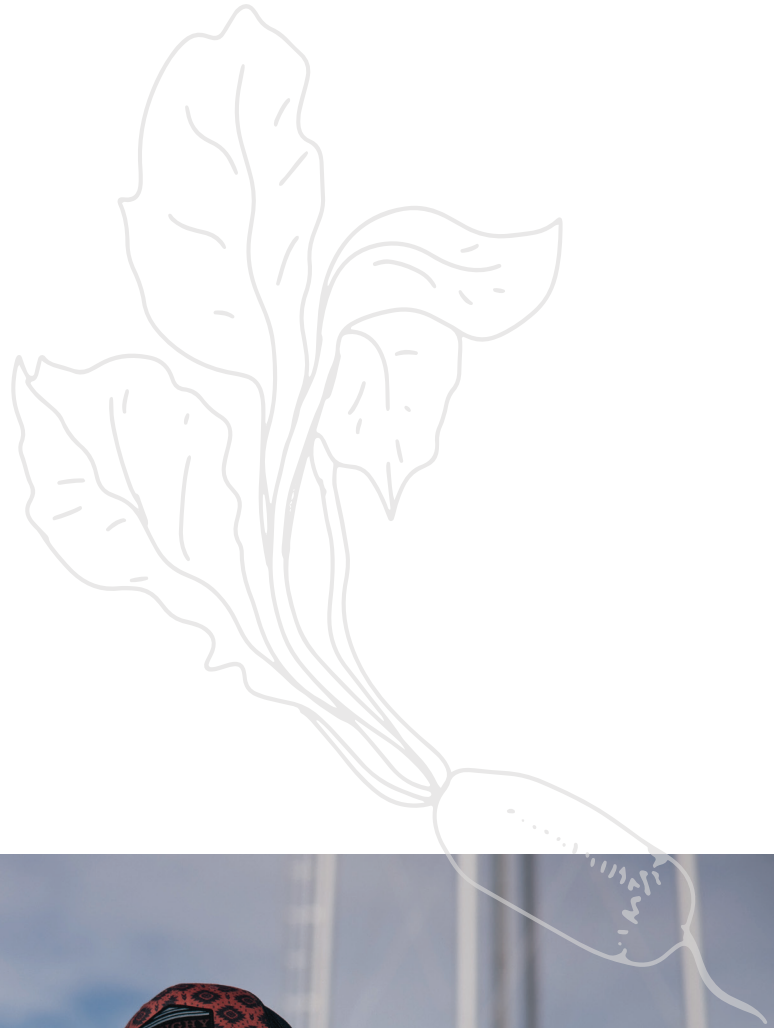


NUTRITION EDUCATION

Defined as "any combination of educational strategies accompanied by environmental supports, designed to facilitate the voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being," nutrition education can involve activities at the individual, family, and community level, and be delivered through multiple channels.³

II. Objective

The objective of this evidence review is to examine the existing evidence regarding nutrition education strategies and approaches targeting individuals, families, and communities facing food insecurity. The purpose is to identify effective nutrition education models and strategies that can be applied within the Feeding America network at the national and local level. Specifically, this report presents the results of a scoping review of nutrition education interventions in food banks, pantries, and similar settings using the RE-AIM framework with an equity lens. These findings will inform recommendations for program models that the Feeding America network can apply in their communities to ensure equitable, community-responsive nutrition education programs that can be implemented within the charitable food system.



III. Introduction

FOOD INSECURITY

In the United States in 2021, 10.2% of all households and 12.5% of households with children were food insecure at some point throughout the year.⁴ Food insecurity is defined as a household that is uncertain of having, or unable to acquire, enough food to meet the needs of all members of the household due to insufficient money or other resources for food.⁴ The majority of households who were food insecure in 2021 report that they were worried food would run out, the food they bought did not last, and they could not afford a balanced meal.

The underlying reasons for food insecurity are complex. Determinants of food insecurity include poverty, non-participation in, loss of, or insufficient public food assistance, unemployment, high cost of living, limited education and/or training, poor mental health outcomes, transportation limitations, incarceration, disability, and health status.⁵⁻⁷ Rooted in systemic inequities and structural racism, based on the inequitable distribution of these determinants, food insecurity disproportionately affects households with Black, non-Hispanic (19.8%) and Hispanic (16.2%) persons, households with children under the age of six (15.3%), and households with children headed by a single woman (24.3%) or a single man (16.2%).^{4,5} In certain regions of the country, evidence indicates that food insecurity may vary significantly between racial/ethnic subgroups.⁸

IMPACT OF COVID-19 ON FOOD INSECURITY

The COVID-19 pandemic increased economic distress, including job loss or increased utility bills, increased food needs, prices, and shortages, and increased psychological stress due to fear of infection, isolation, and children being confined to home.⁹ Individuals who are low-income, living with a disability, parents of children, Black, foreign-born, Native American, Asian and/or Hispanic experienced increased physical and mental consequences of food insecurity since the pandemic began in March 2020 compared to their counterparts.^{10,11}

Many households facing food insecurity rely heavily on the charitable food system (CFS) for food assistance. One in seven families (over 40 million people) in the United States access the system each year. Today, the backbone of the CFS consists of a network of over 200 food banks and over 60,000 partner agencies supported by the national hunger-relief organization Feeding America. The majority of the partner agencies are food pantries located in faith-based settings, community centers, schools, and congregate meal sites.^{12,13} The CFS was developed in the 1960s in the United States to provide emergency short-term food assistance to families; however, many families have relied and still rely on the system for longer-term, chronic food assistance.¹⁴ Some food insecure households report that they consistently access their food pantry for a year or more and/or visit their food pantry at least once a month.^{15,16} Additionally, some food insecure households report accessing as many food pantries as they can and still remain food insecure.¹⁷

FOOD INSECURITY AND HEALTH WITHIN THE CHARITABLE FOOD SYSTEM

In addition to individuals and families experiencing food insecurity, these individuals experience a higher prevalence and risk for poor diet quality and diet-related diseases, including diabetes, hypertension, hyperlipidemia, and heart disease.¹⁸⁻²⁰ Among households who visit food banks and pantries, 58% include at least one individual with high blood pressure and 33% include at least one individual diagnosed with diabetes.¹² Additionally, individuals who are food insecure experience increased risk and prevalence of poor mental health status in adults and children and lower levels of academic achievement in children.^{16,21,22}

DIETARY INTAKE AND FOOD INSECURITY

Evidence shows that increasing diet quality, including increasing fruit and vegetable consumption, improves diet and health status.^{23,24} However, many individuals who utilize food pantries do not eat the recommended amount of fruits, vegetables, and fiber for an active, healthy lifestyle.²⁵ To ensure that individuals have access to nutritious and health-promoting foods, food banks and pantries have begun to implement nutrition policies to influence the types of foods that pantries procure and offer to individuals. Feeding America, in collaboration with Robert Wood Johnson Foundation-Healthy Eating Research Program, released guidelines for food banks and pantries to increase access to and promote healthier food choices across the CFS so that all people in the United States have access to foods necessary for an active, healthy life.²⁶

Some food banks have formal nutrition policies that prohibit the distribution of products such as sugar-sweetened beverages and candy while some food banks and pantries have implemented nutrition rating systems for both procurement of products and display for neighbors. In response to these nutrition rating systems, one study found that food pantry staff believe neighbors would benefit from additional nutrition guidance, recommend providing clear, non-judgmental messages to identify rating of each food, express concern about reliable access to healthy foods from food banks and donors, and note that neighbors might not choose healthy foods due to lack of transportation and cooking equipment.²⁷ Due to consistent and ongoing need from individuals, about one-third (35%) of food pantries provide additional services beyond food assistance to address determinants of food insecurity, including Supplemental Nutrition Assistance Program (SNAP) outreach, housing assistance, employment assistance/training, federal health care assistance, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) outreach, and assistance with the Temporary Aid for Needy Families (TANF).¹²

NUTRITION EDUCATION WITHIN THE CHARITABLE FOOD SYSTEM

Nutrition education programs have been adopted in food banks and pantries as an additional service to inform individuals' food choices at the food pantry as well as beyond what is received at the food pantry to improve diet quality.¹⁴ Additionally, the Supplemental Nutrition Assistance Program - Education (SNAP-Ed) and the Expanded Food and Nutrition Education Program (EFNEP) are two federal programs administered at the local level which focus on improving dietary behaviors in low-income populations.^{28,29} In a qualitative study to assess barriers to healthy eating, individuals who are food insecure reported not knowing which foods are healthful and why, unfamiliar with how to identify and choose better food options, lack of confidence in preparing meals that are palatable and nutritious, and lack of desirable food choices at the food pantry.³⁰ Additional barriers include cost of healthful food, unplanned financial stressors, lack of cooking equipment, limited time, individual diet restrictions due to health conditions, and finding a balance between household food preferences and meeting the nutrition needs of family members of different ages.

Nutrition education programs range widely and can be evaluated with the RE-AIM framework by assessing their reach, adoption, implementation, effectiveness and maintenance within food banks and pantries.³¹ The aim of this evidence review is to analyze nutrition education programs to develop recommendations for program models that uplift health and equity with dignity and a trauma-informed approach that can be implemented in the CFS network.



IV. Methods

FOCUS OF THIS EVIDENCE REVIEW

Feeding America commissioned this evidence review to better understand the implementation and outcomes of nutrition education programs within food bank and pantry settings. Specifically, this evidence review examines the impact of nutrition education programs and interventions operated in food banks, pantries, and/or related settings on nutrition knowledge, food resource management behaviors, dietary quality and food insecurity.

For the purpose of this review, as indicated above, nutrition education was defined as any combination of educational strategies accompanied by environmental supports, designed to facilitate the voluntary adoption of food choices and other food- and nutrition-related behaviors to improve diet-related behaviors and/or cognitions associated with better health and greater longevity.^{3,32} Nutrition education interventions can focus on individuals, families, social networks and be delivered alone or with other types of interventions including policy, systems, and environmental change strategies.³³ Health equity was defined utilizing the Centers for Disease Control and Prevention definition as “the state in which everyone has a fair and just opportunity to attain their highest level of health.”³⁴ Nutrition is an essential component to health equity to address historical and contemporary injustices; overcome economic, social, and other obstacles to health and healthcare; and eliminate preventable health disparities.

This review captured a wide breadth of information related to these nutrition education interventions, including study participant demographics, recruitment methods, the role of partnerships, intervention format, and theory used to create the intervention. This information was then used to score and qualitatively assess the impact of nutrition education interventions and outcomes using two frameworks including: 1) the RE-AIM framework and 2) an equity lens.

The RE-AIM framework has been widely used to evaluate interventions in public health contexts.³¹ The goal of each study was assessed to determine if the intervention was implemented to promote equity by reducing the impact of social or structural inequities. Table 1 highlights the questions considered within each RE-AIM dimension (reach, adoption, implementation, effectiveness, maintenance) for each study. Table 2 highlights the additional questions considered when an equity lens is applied to the RE-AIM framework.³⁴



Table 1. Overall RE-AIM Framework³¹ (adapted from Gaglio et al., 2013)

DIMENSION	QUESTIONS
REACH	Whom did you plan to reach in your initiative?
	Please define the target population.
	How did you advertise and promote the initiative?
	How did you know if the initiative reached the intended audience and who participated?
	What methods did you use to focus on health inequity?
	What information was available to determine that the sample was representative of the target audience?
ADOPTION	What were key characteristics of the target settings?
	How did settings hear about this?
	What external or environmental supports or threats were there?
	What were the expertise or characteristics of those you were targeting to deliver the intervention?
	What characteristics differed from the targeted staff and those who participated (education, time in position, training, capacity)?
IMPLEMENTATION	What were the key elements of the initiative that must be delivered to be successful?
	How did you measure these data (self-report, audit, checklists)?
	Describe the feasibility of these methods.
	What were the implementation challenges you had to overcome?
	Were these costs and resources available and reasonable to ask for (high enough priority)?
EFFECTIVENESS	What was the targeted individual-level change?
	How did you measure these changes?
	What were the biggest threats to seeing the outcomes you wanted?
MAINTENANCE	What infrastructure was needed to sustain the initiative?
	Is there infrastructure and funding that would remain?
	How were individuals delivered key program components over time? Did they stay in contact?
	How did you continue to track its success and provide ongoing feedback?
	How did you track the major changes made over time?

Table 2. Equity RE-AIM Framework³⁴

DIMENSION	QUESTIONS
REACH	What demographic groups were reached? Geography, race/ethnicity, gender, gender identity/LGBTQ, single head householders?
	Were the participants representative of the individuals experiencing food insecurity in the targeted area? Did they target individuals, neighborhoods, and/or communities of high need?
	What approaches were used to recruit participants? Community involvement?
	Was attrition different for various populations? Did certain groups refuse to participate?
	How did you know if the initiative reached the intended audience and who participated?
ADOPTION	What types of food banks adopted/implemented nutrition education interventions? Capacity? Size? Location?
	What staff were involved/included in adoption? Was geography, race/ethnicity, gender, gender identity/LGBTQ, single head householders, lived experience of staff considered?
IMPLEMENTATION	What was the quality (fidelity) of implementation for different populations/across different settings? Capacity? Size? Location?
	Was the intervention adapted to meet the needs of diverse populations including considerations of language, culture, location, social determinants of health?
EFFECTIVENESS	Did the study/project use intervention methods to consider differences related to geography, race/ethnicity, gender, gender identity/LGBTQ, single head householders?
	Was the effectiveness assessed for or stratified by different populations?
	Was effectiveness different for different populations? Less/more effective?
	Did the intervention/program help promote equity and close gaps between populations?
	Was maintenance different for different populations?
MAINTENANCE	Did certain groups drop out early?
	Was the program adopted long-term and institutionalized in diverse settings and settings of high need? Capacity? Size? Location?

MATERIALS AND METHODS

Review of the Peer-Reviewed Literature

We followed the procedures outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for scoping [reviews](http://www.prisma-statement.org/Extensions/ScopingReviews) (http://www.prisma-statement.org/Extensions/ScopingReviews). In January 2021, a librarian-facilitated database search was conducted to identify nutrition education strategies and approaches currently being implemented within the CFS. A search was conducted using a combination of terms shown in Table 3. The search was conducted across the following databases: PubMed, Google Scholar, Web of Science, PsycINFO, Social Services Abstracts, Academic Search Complete, Scopus, and CINAHL. We adjusted vocabulary and syntax as necessary across the databases.

Inclusion criteria included studies that were published in English and conducted in the United States and/or Canada. The nutrition education intervention was included if it was implemented in or by food banks, food pantries or if the intervention targeted these populations in other community settings. The target audience for the nutrition education was adults (ages 18 years or older), unless the intervention was specifically created for children in a food bank or food pantry setting. Studies dating from 1990 through 2021 were included in the results.

Table 3. Search Criteria

CATEGORY	VARIABLE	ELIGIBLE IF
STUDY DETAILS	Terms	Food Banks, Food Pantries/Pantry, Nutrition, Food, Education, Curriculum, Teaching, Classes, Cooking, Program, Intervention
	Publication Type	Published journal articles, academic research, technical reports, and unpublished academic research
	Publication Date	1990 - January 2021
	Publication Language	English
	Intervention Location	United States Canada
	Implementation	In/by food banks or pantries or that target populations of clients at food pantries in other community settings
POPULATION	Participants	Adults 18 years or older
	Socioeconomic Status	Low-income, low socioeconomic status, individuals experiencing food insecurity or that were enrolled in means-tested food assistance programs such as SNAP, SNAP-Ed eligible, EFNEP, WIC

Manual screening of abstracts and titles was completed using a combination of RefWorks, a citation, bibliography, and reference management tool, and excel spreadsheets. Each citation was assigned to two reviewers. Reviewers were master's level professionals trained in public health and/or nutritional sciences. Full text screening was completed concurrently with data extraction. A template for data extraction was developed for a similar scoping review and revised by study authors to be consistent with the goals and objectives of the current review. Analysis was completed by sorting the studies with common interventions and methodology types and counting the number of studies reporting an association with increases or decreases in dietary and related behaviors vs. no association. In most cases each of the studies reported multiple outcomes. A key focus for this review was on dietary quality and improvements in food/food groups consistent with the Dietary Guidelines for Americans. Outcomes related to micronutrients were excluded except for folate intake. These data were used to create figures that communicate an overview of the evidence on each topic. Studies were categorized as a positive association with diet, either statistically significant or non-statistically significant at a p-value of 0.05, if there was an improvement in at least one subpopulation or measure of dietary behavior. Studies that reported no change in dietary behaviors were categorized as no association with diet. Counts are depicted in tables and figures.

Additionally, to assess each RE-AIM component, a RE-AIM score was based on a systematic review article by Gaglio and colleagues,³¹ which highlighted RE-AIM as a review criterion for the various elements and dimensions across the framework (Table 1). We attempted to develop a similar score to assess equity; however, based on the limited information reported in the published studies, qualitative scoring was difficult. Consequently, equity was evaluated using a narrative review using the questions developed when we applied an equity lens to the components of RE-AIM.

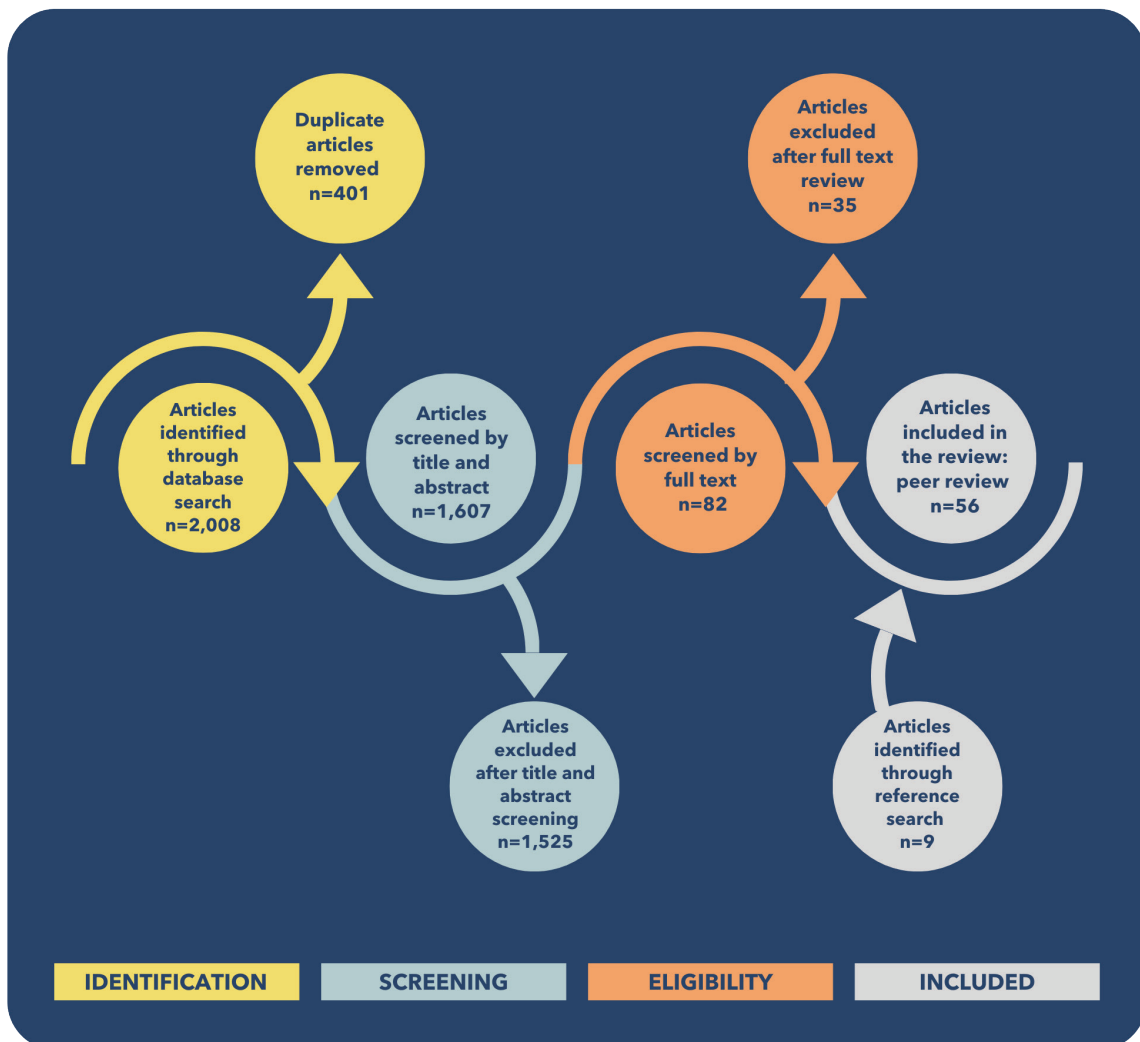


SEARCH RESULTS

A total of 2,008 articles were identified using the search criteria. Of these identified articles, 401 duplicates were removed. The titles and abstracts for the remaining 1,607 articles were assessed for eligibility. A total of 1,525 articles were excluded because they did not meet the inclusion/exclusion criteria (including not targeting low-income populations, programs targeting children, and no results reported), leaving 82 articles for full-text review. Thirty-five articles that did not meet the inclusion criteria were excluded during the full-text review process. An additional nine articles were added after being identified through reference searches and hand searches for a total of 56 studies.

Figure 1.

Flow of Article Review Process



V. Review Findings

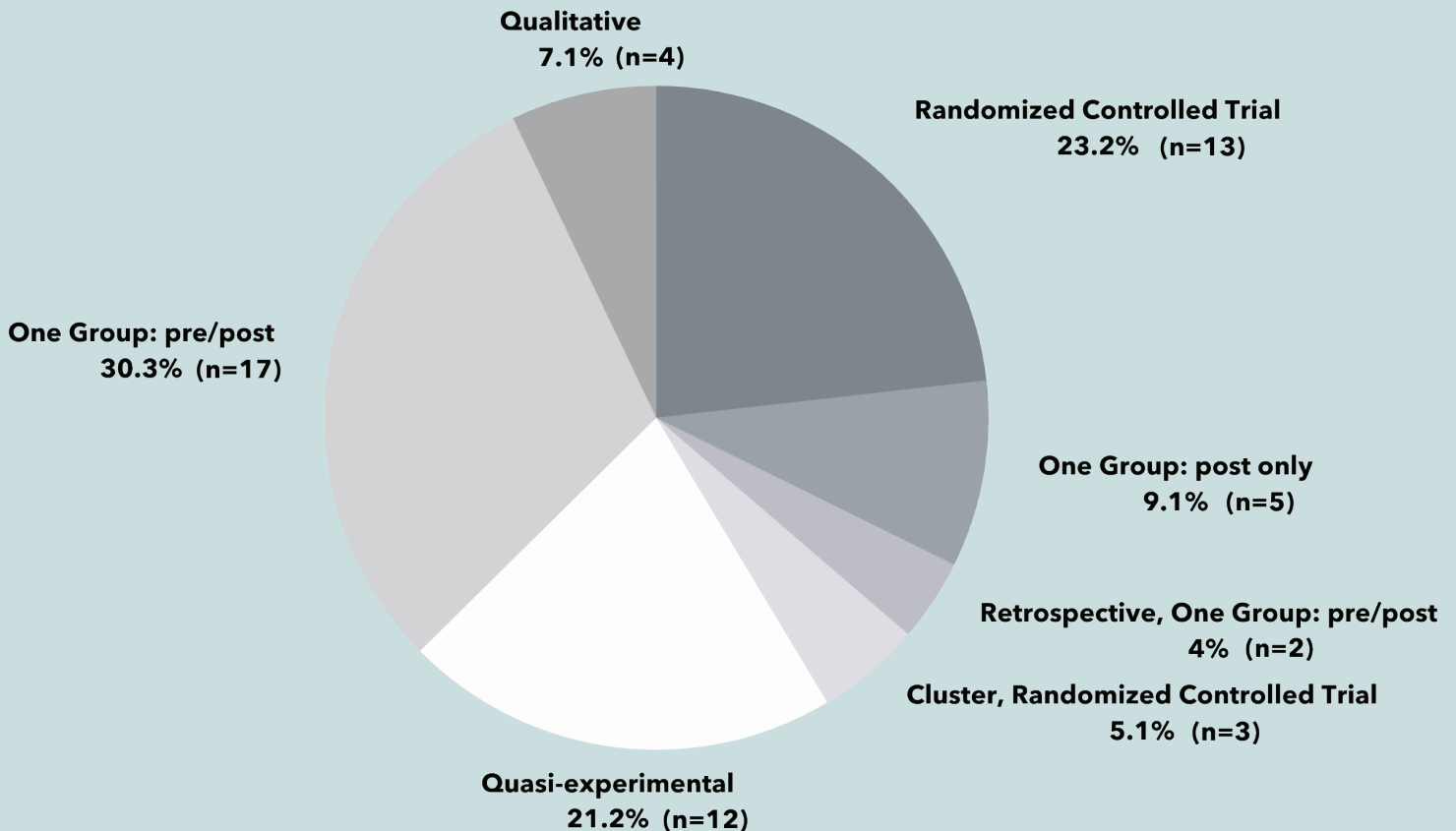
For full review results, see [Appendix I](#) where each study is summarized in detail based on the RE-AIM framework with an equity lens. The section below summarizes in aggregate the results of each RE-AIM dimension across the 56 nutrition education programs reviewed based on the peer-reviewed literature search.

RESEARCH DESIGN

The study designs of each program evaluation included randomized controlled trials; cluster, randomized controlled trials; quasi-experimental; one group: pre/post; retrospective, one group: pre/post; one group: post only; and qualitative. The majority of studies were one group: pre/post (30%);³⁵⁻⁵¹ randomized controlled trials (23%);⁵²⁻⁶⁴ and quasi-experimental (21%).⁶⁵⁻⁷⁶ Additionally, 9% were one group: post only;⁷⁷⁻⁸¹ 7% were qualitative;⁸²⁻⁸⁵ 5% were cluster, randomized controlled trials;⁸⁶⁻⁸⁸ and 4% were retrospective, one group: pre/post.^{89,90}

Figure 2.

Study Design of Peer-Reviewed Literature (n=56)



ASSESSMENT OF RE-AIM DIMENSIONS

Recruitment and Reach

All 56 studies included aspects of the reach dimension of the RE-AIM framework. The reach dimension includes data on the sample size, participation rate, inclusion/exclusion criteria, location, demographics of participants including age, sex, race/ethnicity, and educational attainment. The average participation rate across all studies was 65%, which is defined as the number of people who started the program divided by the number of people who were enrolled. All studies reported sample sizes, ranging from 22 to 43,303 individuals, with a median sample size of 164 participants. The large range of sample size is due to some programs happening at one site vs. multisite programs. The study with 43,303 individuals was a multi-state SNAP-Ed evaluation and the goal of the study was to aggregate data across multiple sites.

All studies, due to inclusion criteria, focused on low-income individuals or individuals experiencing food insecurity. Six studies required that individuals report being food insecure, 17 studies targeted individuals who were served by food pantries, 10 studies indicated that the target population was required to be individuals SNAP-Ed eligible, four studies had a population focused on individuals who were enrolled in SNAP, and two studies targeted individuals who were enrolled in WIC. Additionally, 12 studies used other criteria with one study focused on individuals with diabetes, one study focused on individuals who were Spanish-speaking, one study focused on individuals with disabilities, one study focused on individuals with low-literacy, two studies focused on pregnant individuals, one study focused on parents/families with young children, and four studies focused on older adults. Lastly, one study focused on nutrition education for food pantry volunteers vs. end users.

In each of the 56 studies, there were a variety of ways in which participants were recruited to participate in the nutrition education intervention. Programs in 31 studies recruited participants from food pantries/food banks, 18 recruited at health services organizations or safety net clinics, 12 at SNAP-Ed or EFNEP sites, five at schools, five at public housing facilities, four at community

organizations, and three at congregate nutrition sites. Additionally, nutrition programs utilized each of the following as sites for recruitment one time: community bulletin boards, by mail, senior centers, grocery stores, laundromats, homeless shelters, community-supported agriculture (CSA) farms, and libraries.

Forty-eight studies included gender/sex data. All of these studies reported greater than 50% female participants with 26 studies including greater than 75% female participants and 11 studies including 100% female participants.

Each study defined race/ethnicity differently with some studies reporting both race and ethnicity data, only race data, only ethnicity data, or neither. Of the 46 studies that reported race/ethnicity data, 26 studies included majority (greater than 50%) people of color. Of these 26, eight of these studies had greater than 50% Black participants, 12 of these studies had greater than 50% Latinx participants, and one study had majority Native American participants (36%).

For educational attainment, each study reported the data differently with some reporting years of school completed and some as categories based on levels of education attained. After combining these methods together to create a summary across all 26 studies that reported the level of education of participants, eight studies included most participants with less than high school/GED educational attainment and 18 studies included a majority of participants with high school/GED or greater educational attainment.

Of the 26 studies that reported mean age, the mean age was 44.6 years old. Of the 33 studies reporting a range of ages, the range across studies was 15 to 100 years old with the majority of studies targeting individuals who were at least 18 years and older.

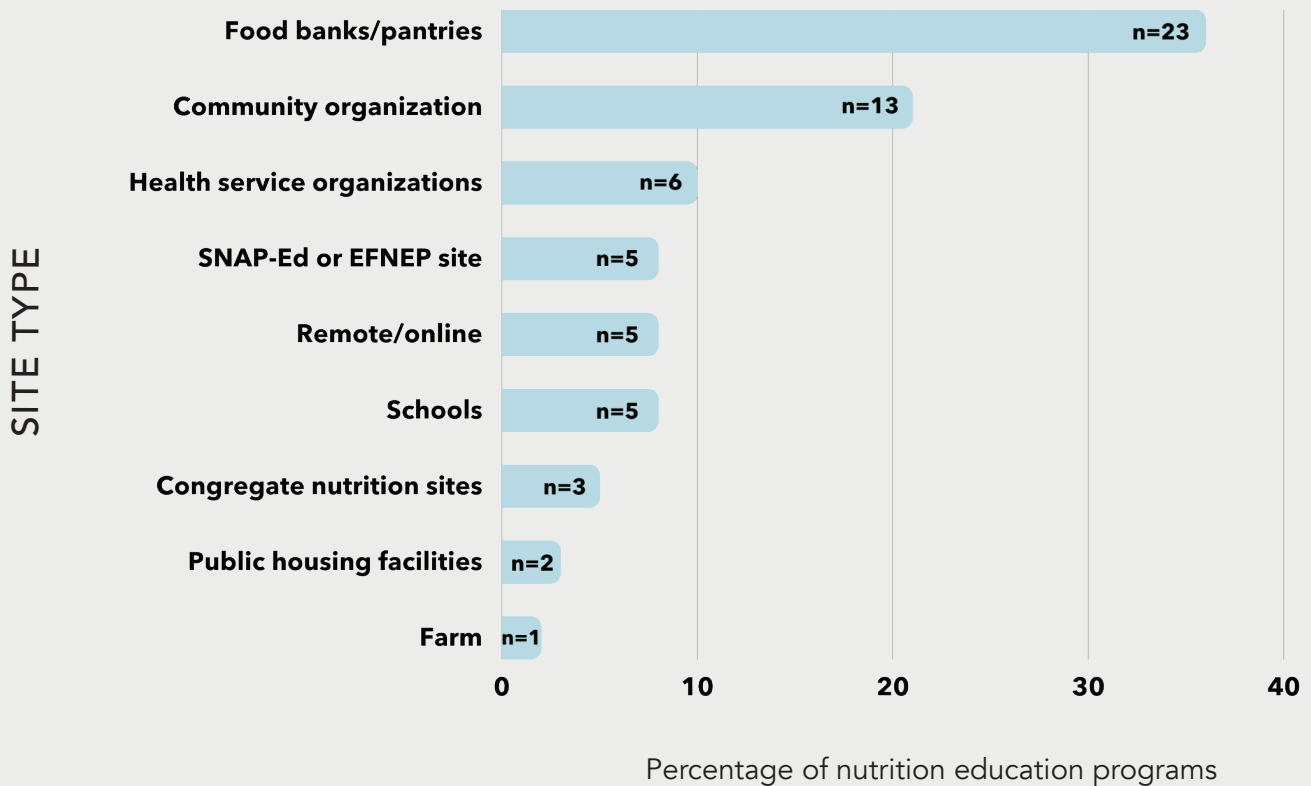
Fifty-five out of the fifty-six studies were in the United States with one study located in Canada. Of the studies in the United States, 13 studies were in the Southeast, 14 in the Northeast, ten in the West, eight in the Midwest, four in the Southwest, and six in multiple regions in the United States.

Adoption

When assessing the adoption dimension of the RE-AIM framework, we summarized the setting where the nutrition education program took place, who the program was delivered by, whether there were any partners with the program and the partner’s role with the program.

In each of the 56 studies, there were a variety of sites implementing the nutrition education program. Twenty-three interventions took place at food pantries/food banks (36%), 13 took place at a community organization (21%), six took place at a health service organization (10%), five took place at a SNAP-Ed or EFNEP site (8%), five took place remote/online (8%), five took place at schools (8%), three took place at congregate nutrition sites (5%), two took place at public housing facilities (3%), and one took place at a farm (2%).

Figure 3.
Site Type for Nutrition Education Programs

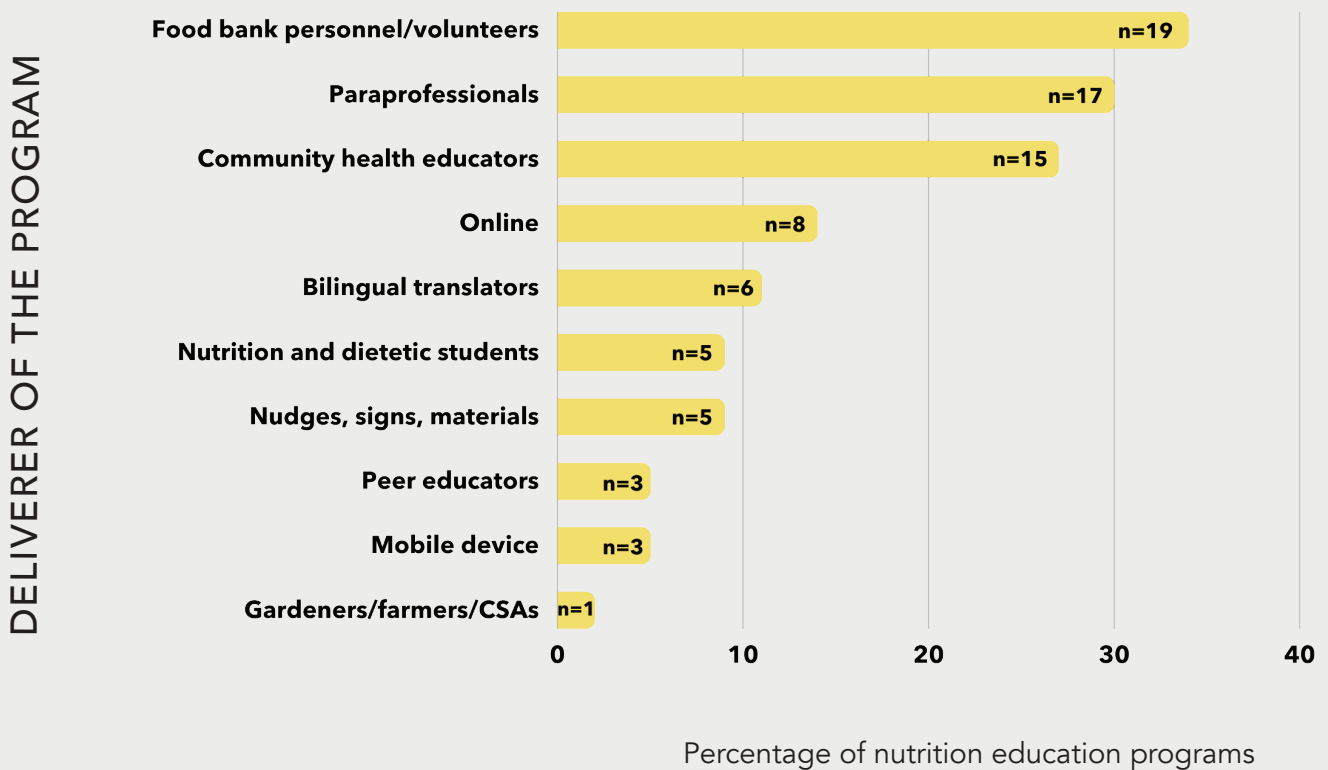


Another aspect of adoption is the method by which the interventions were delivered to participants. Nineteen were delivered by trained food bank/pantry personnel and volunteers (34%), 17 were delivered by paraprofessionals (30%), 15 were delivered by community health educators (27%), eight were delivered online (14%), six were delivered through bilingual translators (11%), five were delivered through nudges, signs, or materials (9%), five were delivered by registered dietitians, dietetic technicians, certified diabetes educators, nutrition and dietetic students (9%), three were delivered by peer educators (5%), three were delivered on a mobile device (5%), and one was delivered through gardeners/farmers/CSA communities (2%).



Figure 4.

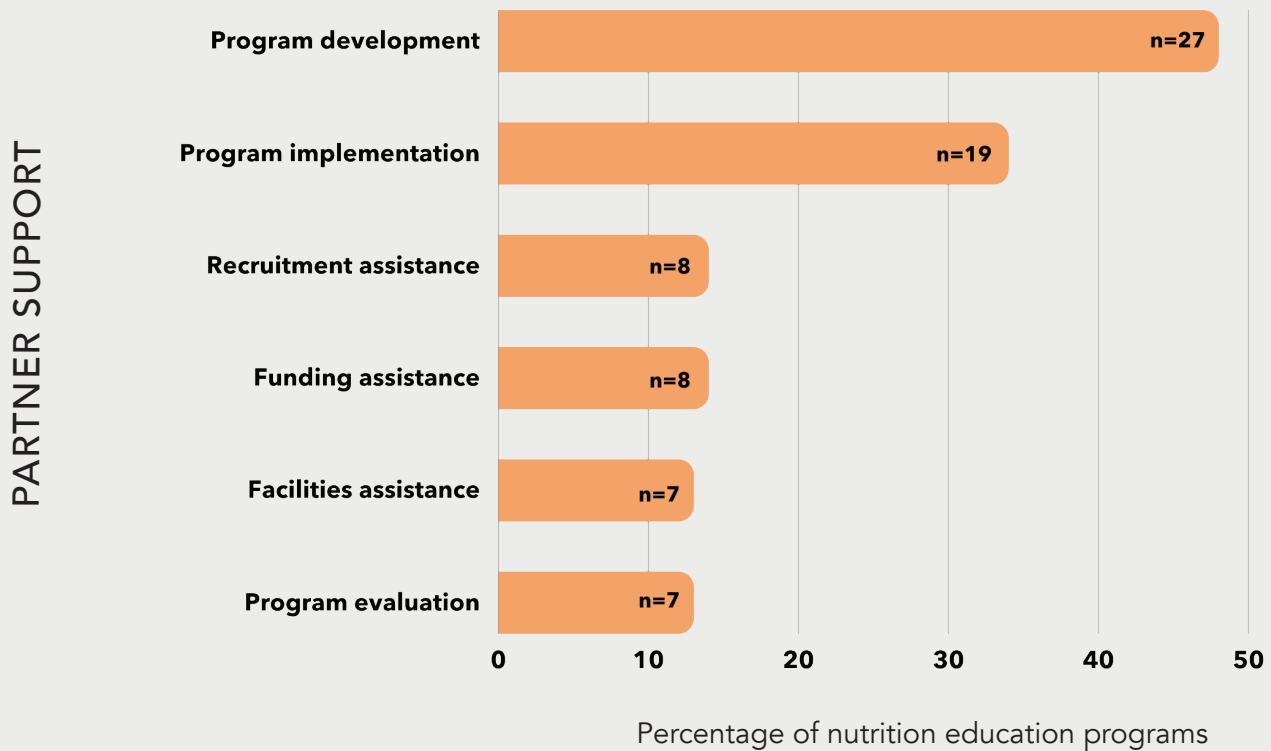
Deliverer of Nutrition Education Programs



Many of the interventions used a partner to assist with different aspects of the program. Twenty-seven of the studies had a partner to assist with program development (48%), 19 studies had partners that assisted with program implementation (34%), eight studies had partners that assisted with recruitment (14%), eight studies had partners that assisted with funding (14%), seven studies had partners that provided facilities (13%), and seven studies had partners that provided program evaluation (13%).

Figure 5.

Type of Support Partners Provide in Adoption of Nutrition Education Programs





Implementation

The implementation dimension of the RE-AIM framework included the type of intervention, how the intervention was delivered, the frequency and duration, how the data were collected, and the attrition rate. For these studies, the intervention was the nutrition education program.

Most interventions had multiple components that addressed nutrition education including didactic education, cooking demonstrations, take home food, taste tests/recipe testing, experiential learning, nudges, referrals to community resources, coaching/counseling, incentives, and market tours. All interventions included some form of didactic education/teaching. Ten interventions included cooking demonstrations, 15 included either a client choice pantry or food to take home, eight included taste tests or recipe testing, four included interactive online content, four included nudges, four included referrals to community resources, six included coaching/counseling, one included incentives, and two included a market tour. Definitions of each component type and contents covered are described in Table 4.



Table 4. Definitions of Implementation Components and Content

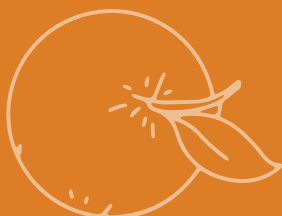
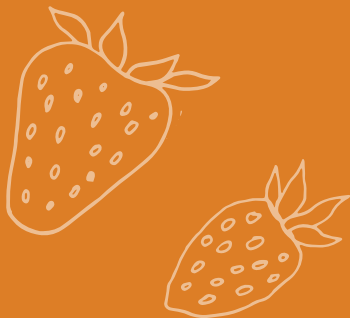
CONSTRUCT		DEFINITION
COMPONENTS OF NUTRITION EDUCATION PROGRAMS	Didactic education/teaching	Lessons including presentations, hands-on activities, and handouts
	Cooking demonstrations	Observations of others cooking/preparing a meal/snack
	Take home food/client choice	Food ingredients for participants to take home
	Taste test/recipe testing	Opportunities to try or taste a food/recipe
	Online education	Utilizing online platforms to conduct nutrition education through videos/applications
	Nudges	Factors in the choice architecture to alter a person's behavior in a predictable manner
	Referrals to community resources	Providing resources for support in communities such as financial or housing assistance or support with WIC or SNAP
	Coaching /counseling	Providing one-on-one support for how to improve food choices and meet long term and self-sufficiency need
	Incentives	Reward to motivate improving nutrition behaviors
	Market tour	Giving a tour of supermarket for shopping tips for healthy eating
CONTENTS COVERED DURING NUTRITION EDUCATION PROGRAMS	Culturally responsive education	Educational content that considers the culture of the program population when designing and implementing curriculum
	General nutrition guidance (USDA MyPlate, food labels, food groups)	To educate on strategies to broadly eat healthy including information on food groups and how to utilize tools (nutrition labels and USDA) for support
	Decision making (nudges, planning and shopping)/food resource management	To educate on ways to make decisions to utilize food resources effectively including strategies to meal plan and shop
	Maternal/pregnancy	To educate on nutrition for pregnancy and new mothers
	Food safety	To educate on ways to maintain food safety in shopping, preparation, and consumption
	Client choice pantry	Food pantries that allow clients to choose the foods they take home
	Stress management	To educate on ways to manage and lower stress
	Training for pantry volunteers	To educate pantry volunteers on how to help educate clients on nutrition knowledge and behaviors

Within every component of an intervention, there were different contents covered including food group/nutrient-specific education, healthy eating skills/resources, decision making/food resource management, maternal/pregnancy specific education, food safety, client choice pantry model, stress management, and training for pantry volunteers. Fifty-one out of 56 of the interventions included content on healthy eating skills and resources such as the United States Department of Agriculture (USDA) MyPlate or nutrition labels. Forty-two intervention components incorporated food group/nutrient-specific information, 17 included decision-making resources and food management content, five included food safety information, five included a client choice pantry, three included stress management information, five included information specific to maternal/pregnancy outcomes, two included training for pantry volunteers, and three included culturally responsive education. [Appendix II](#) highlights the intervention components involved in each of the nutrition education programs included in the review. [Appendix III](#) describes the content covered in each nutrition education program.

Since these studies were focused on nutrition education, many studies used theoretical constructs which informed their intervention. Thirty-five studies reported the theoretical model with 13 using the Social Learning Theory/Social Cognitive Theory, six using Stages of Change, five using the Health Belief Model, four using the social-ecological approach, two using ecSatter model, two using Adult Learning Theory, and two using Piaget Education Theory. The following theoretical frameworks were each used by one intervention: Grounded Theory Approach, Theory of Planned Behavior, Behavior Economic Theory, Experiential Learning Theory, Construal Level Theory, Self-Determination Theory, and Reactance Theory.

The delivery method varied from intervention to intervention with the greatest number of interventions delivering the program in-person (85%) and the rest delivering the intervention online (15%). Thirty interventions used a group setting, eight interventions used one-on-one education, and three interventions used mobile devices.

Each intervention varied in the duration of the program and the frequency by which the program was delivered. Six interventions were held one-time, ten interventions spanned from two weeks to one month in duration, eleven interventions were held one to two months, eight interventions spanned two to four months, five interventions spanned six months to one year, and two interventions spanned one year to one and a half years. Several interventions reported the total number of sessions but did not specify how much calendar time this spanned including five interventions that had three to five sessions total and three interventions that had eight to 10 sessions total. The frequency of the program being delivered also varied with most of the interventions happening one time per week (18 interventions), two times per month (five interventions) or one time per month (five interventions).



Effectiveness

For effectiveness within the RE-AIM framework, we summarized the studies based on the statistical model, primary and secondary outcomes evaluated, and direction and significance of the outcome results.

To collect data for the study, 49 of the 56 studies used surveys, questionnaires, or pre/post tests. In addition, ten studies used focus groups, three studies used 24-hour dietary recalls, twelve studies used semi-structured interviews, one study used direct observations, one used anthropometric measures, and one study did not disclose how they collected the data.

Fourteen out of the 56 studies reported attrition rates, largely based on if the study design included follow-up. Attrition rate is defined as the percentage of participants who started the program and completed the program at least to the study's first follow-up evaluation. Twelve out of 14 of the attrition rates were greater than 50% with an average attrition rate of 88%.

For the main outcomes, the majority of studies used chi-square and t-tests to statistically evaluate for differences between two variables either categorical or continuous. Additionally, seven studies used generalized linear regression models.

The different outcomes can be categorized as knowledge/beliefs, food resource management and safety, dietary behavior, food security, diabetes management, and physical activity outcomes. The majority of studies measured dietary quality through dietary behavior changes, fruit/vegetable consumption, or overall dietary quality measures (28 studies). Twenty-two studies measured nutrition knowledge and 11 studies measured food security. [Appendix IV](#) describes further the different health outcomes measured within the randomized controlled trials (n=16) and quasi-experimental (n=12) study designs included in this review, including the direction and statistical significance (if applicable) of the outcome. Information on effectiveness for all studies included in the review can be found in [Appendix I](#).

When measuring dietary quality, the majority of studies collected dietary change using the Block Fruit and Vegetable Screener or through self-report changes of servings/cups of fruits and vegetables consumed. A few studies collected 24-hour recalls. Ten studies reported on food security outcomes using varied screeners, including the 18-item USDA Food Security Module.

For knowledge outcomes, 12 out of 22 studies (55%) that measured nutrition knowledge found positive improvements that were statistically significant, six (27%) found positive improvements that were not statistically significant, three (14%) found positive improvements expressed through qualitative measures, and one (5%) found no change.

For dietary quality, 18 out of 28 studies found statistically significant positive improvements in dietary behaviors, nine found positive improvements that were not statistically significant, and zero found decreases in dietary quality.

For food security, seven out of 11 studies that measured food security had positive improvements in food security status and four found positive improvements in food security status that were not statistically significant.

Evaluations of nutrition education programs that provide support beyond food and groceries have shown to result in significant improvements in food security, self-sufficiency, self-efficacy and diet quality.^{36,54,58} Common themes within the nutrition education interventions with positive improvements in fruit/vegetable consumption, dietary quality and food security include multi-component or multi-level interventions (for example, More than Food framework, Freshplace, Fresh Start),^{36,42,58} interventions of longer term duration (greater than six weeks), and interventions with facilitators of the program who were community educators/peer to peer, bilingual, and indigenous paraprofessionals.

SPOTLIGHT ON EFFECTIVE NUTRITION EDUCATION PROGRAMS

The following three peer-reviewed studies included in this review showed positive improvement in the measured outcomes.

FOR FOOD PANTRY NEIGHBORS

A Novel Food Pantry Program: Food Security, Self-Sufficiency, and Diet-Quality Outcomes⁵

Study design: Randomized Controlled Trial

REACH

Population: Majority Black (72%) and female (61%) with average age of 52 years old

IMPLEMENTATION

Theory to guide intervention design: Stages of Change Model and Social Cognitive Theory

Intervention Components:

- Client choice pantry called Freshplace
- Monthly meetings with project manager to receive motivational interviewing
- Targeted referrals to community services, including a six-week cooking class

Intervention site: food banks and pantries

Frequency and duration of intervention: visits pantry two times per month, meets with project manager one time per month, community services as needed including a six-week cooking class

EFFECTIVENESS

Improvements in self-sufficiency, fruit and vegetable intake, and food security status

Martin KS, Wu R, Wolff M, Colantonio AG, Grady J. A Novel Food Pantry Program: Food Security, Self-Sufficiency, and Diet-Quality Outcomes. *Am J Prev Med.* 2013;45(5):569-575. doi:10.1016/j.amepre.2013.06.012

FOR INDIVIDUALS EXPERIENCING DIABETES AND FOOD INSECURITY

A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients in Three States³⁹

Study design: One Group: Pre/Post

REACH

Population: Majority Hispanic/Latino (56%) and female (75%) with uncontrolled HbA1c and average age of 54 years old

IMPLEMENTATION

Theory to guide intervention design: no theory mentioned

Intervention Components:

- Diabetic appropriate foods given in tailored food pantry boxes
- Support with blood sugar monitoring and self-management
- Primary care physician referrals

Intervention site: food bank

Frequency and duration of intervention: intervention received every one to two weeks, dependent on household size, for six months in duration

EFFECTIVENESS

Improvements in hemoglobin A1c (a biomarker of diabetes management), improvements in fruit and vegetable intake, improvements in self-efficacy, decreases in diabetes distress, decreases in medication nonadherence

Seligman HK, Lyles C, Marshall MB, et al. A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients In Three States. *Health Aff Proj Hope.* 2015;34(11):1956-1963. doi:10.1377/hlthaff.2015.0641

FOR LOW-INCOME HOUSING COMMUNITIES

Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial⁸⁸

Study design: Cluster, Randomized Controlled Trial

REACH

Population: Majority Hispanic/Latino (55.2%) and female (74%) with average age of 54 years old

IMPLEMENTATION

Theory to guide intervention design: Social Ecological Model

Intervention Components:

- Discounted fruit and vegetable market in close proximity to housing
- Nutrition education programming with 1) recipe cards, 2) monthly newsletter, 3) educational DVDs, and 4) chef demonstrations with taste tests

Intervention site: mobile market at public housing site

Frequency and duration of intervention: 12 months in duration with two six-week educational campaigns and mobile markets on-site two times per month

EFFECTIVENESS

Increases in fruit and vegetable intake and improvements in frequency of fruit and vegetable eating behaviors

Gans KM, Risica PM, Keita AD, et al. Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the "Live Well, Viva Bien" cluster-randomized trial. *Int J Behav Nutr Phys Act.* 2018;15(1):80. doi:10.1186/s12966-018-0704-2

These programs highlight the importance of considering:

1. the population that the nutrition education program is trying to reach;
2. how the recruitment strategies should be tailored to the specific population;
3. whether the intervention design is in alignment with health behavior change theory;
4. whether the intervention includes multiple components that address the theoretical conceptual model for the desired behavior change;
5. whether the intervention is accessible and convenient for the targeted population; and
6. whether the dose and frequency by which the intervention is implemented is adequate for sustained changes in the desired outcomes.

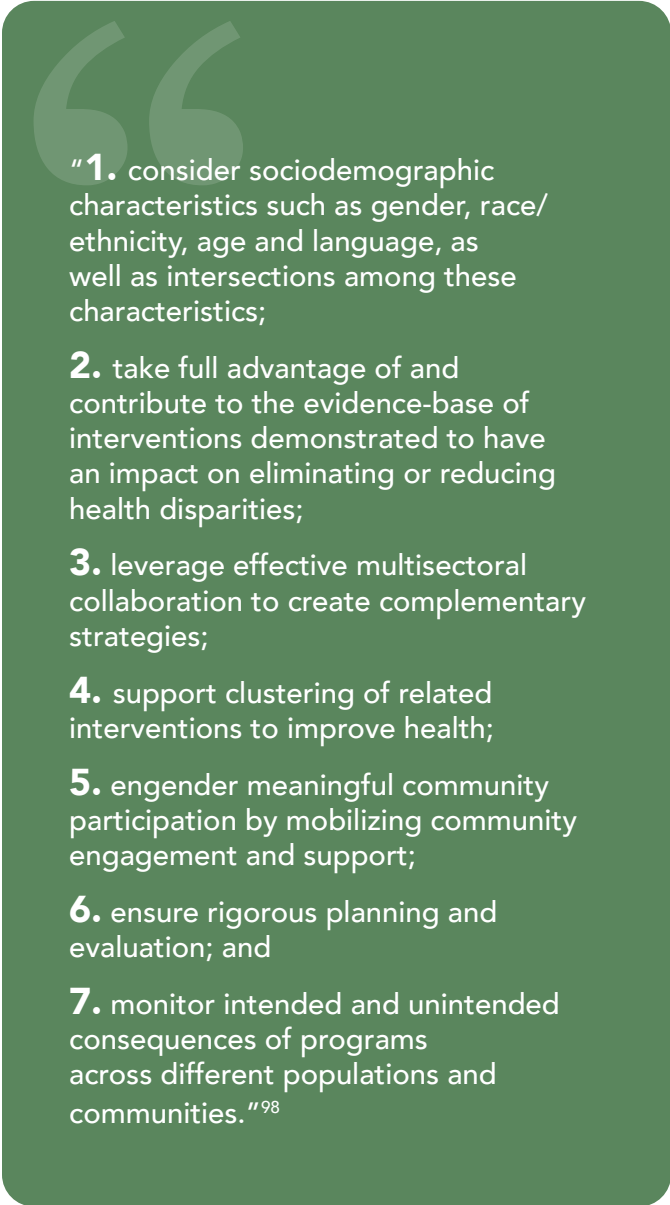
Maintenance

To assess maintenance within the RE-AIM framework for each of the studies, we summarized the follow-up period for the study following the nutrition education program implementation. Among the study designs that yield follow-up, 25 studies followed participants after completion of the program with the majority of studies having a one-month follow-up time period.



EQUITY

Health equity is the “state in which everyone has a fair and just opportunity to attain their highest level of health.”³⁴ Achieving health equity requires the implementation of social and structural efforts to alleviate the impact of unjust systems and policies that have persisted over centuries. It is important that health equity be at the center of public health programs and focus on addressing one or more social determinants of health. Specifically, Taillepierre and colleagues (2016) recommend that to promote health equity, every public health program should:

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1. consider sociodemographic characteristics such as gender, race/ethnicity, age and language, as well as intersections among these characteristics;
 2. take full advantage of and contribute to the evidence-base of interventions demonstrated to have an impact on eliminating or reducing health disparities;
 3. leverage effective multisectoral collaboration to create complementary strategies;
 4. support clustering of related interventions to improve health;
 5. engender meaningful community participation by mobilizing community engagement and support;
 6. ensure rigorous planning and evaluation; and
 7. monitor intended and unintended consequences of programs across different populations and communities.”⁹⁸

To this end, as described in the methods section, we modified the RE-AIM framework to assess ways in which health equity was considered within the studies included in this review. Overall, it was difficult to fully assess and compare equitable approaches to nutrition education programs among low-income populations across studies. However, related to the reach dimension, since the review was limited to nutrition education efforts targeting low-income and/or individuals experiencing food insecurity, we assessed whether the program focused on reaching specific populations that have been disproportionately impacted by low food access, adverse dietary conditions, and diet-related diseases. On a positive note, over 50% of the studies targeted communities of color. Yet, few included Asian and American Indian/Native American populations. Additionally, the majority of participants in studies were female with fewer including, and none specifically targeting, males or transgender/non-binary populations. Lastly, few studies reported that they included or specifically targeted sites that serve LGBTQ+ populations. Based on the lack of detail provided in the study descriptions and/or consistency across studies, it was difficult to assess other aspects of reach, including if participants were representative of individuals experiencing food insecurity in the target area and differences in attrition.

Aspects of the adoption dimension were also difficult to assess. However, for implementation, approximately half (n=22) of the studies engaged community partners and/or paraprofessionals/community health workers in program implementation. Additionally, four studies focused on some root causes, including employment and resource coaching and/or combining traditional nutrition education with economic mobility components. Only three studies indicated that they focused on providing nutrition education that was culturally tailored. Lastly, effectiveness and maintenance were unable to be assessed. None of the studies disaggregated outcomes data based on demographic characteristics. Consequently, there was little to no assessment of whether the nutrition education programs widened or narrowed the gaps in dietary behaviors and/or health outcomes among individuals and groups disproportionately impacted by food insecurity, including racial/ethnic, individuals with disabilities and LGBTQ+ populations.

VI. Looking Forward

CONSIDERATIONS WHEN EXPLORING NUTRITION EDUCATION PROGRAMS

From this RE-AIM evidence review of nutrition education programs in food bank/food pantry settings, it is evident that there is no one-size-fits-all approach regarding obtaining the most successful reach, adoption, implementation, effectiveness and maintenance.

When assessing which studies had positive effects on dietary quality and improvements in food security, it is difficult to understand the causal relationship between the intervention, particularly the interventions with multiple components, and the outcomes of interest.

KEY RECOMMENDATIONS

1

Develop clear goals and objectives to help inform the development of the program design and evaluation plan.

2

Define clearly the population for the nutrition education program and know how you will reach the desired population.

3

Center equity in all decisions to ensure the program will reduce health disparities and improve health for all.

4

Prioritize nutrition education programs that are culturally tailored with multiple components.

5

Conduct more evaluations of nutrition education programs that are trauma informed, culturally and community responsive, and target root causes of food insecurity to add to the peer-reviewed literature.

To equitably serve individuals and families that face economic disadvantage with dignity and promote fairness and justice for communities over-represented within the food insecure population based on historic and structural oppression, nutrition education programs must be designed and implemented with consideration of sociocultural context. Since food insecurity creates trauma for many due to its physical and mental health consequences, evidence suggests a trauma-informed approach is necessary.^{91,92} However, although internal evaluations of these programs have yielded positive results, unfortunately, they have yet to appear in the peer-reviewed literature. Additionally, there needs to be a dismantling of a one direction flow of knowledge from facilitator to client to disrupt the racialized power imbalance which strips dignity from clients.⁹³ Some barriers to implementing nutrition education programs in food pantries include limited budgets and shortage in personnel, limited education of pantry managers with nutrition knowledge, and fear of low participation by clients in activities.^{17,23,94} Several studies have provided recommendations for best practices for nutrition education in low-income audiences and food pantry clients;^{93,95-97} however, there is a lack of a comprehensive review within the literature that evaluates past and present nutrition education program models within food bank and pantry settings with an equity lens to understand the programs' impact.

Within the Feeding America network, it is important to note that there are additional nutrition education programs and interventions that haven't been evaluated in the peer-reviewed literature, and were not included in this evidence review, yet show promising signs of clinical effectiveness to equitably improve diet quality and related outcomes. For example, one curriculum *Around the Table* developed by Leah's Pantry, which is being implemented across the United States, uses trauma-informed practices that are embedded within the lesson plans. The curriculum teaches skills to de-escalate stress and promote resilience around food by developing participant self-efficacy and confidence in cooking, nutrition knowledge, and food resource management.^{99,100}

Another example is *A Taste of African Heritage*, which is also being implemented across the United States in over 26 states. The curriculum was developed by Oldways and a committee of African American nutrition scientists and culinary historians and uses heritage as a motivator for health by honoring African American's culture, traditions, and contributions.¹⁰¹ A recent evaluation was conducted after completion of the review process for this evidence review that found positive health and nutrition behavior changes associated with this nutrition education curriculum.¹⁰² Moving forward, it is necessary to conduct a full landscape scan of nutrition education programs within the CFS and conduct rigorous peer-reviewed evaluations with an equity lens of these innovative solutions to further build the knowledge on how nutrition education programs can equitably improve dietary quality among individuals who are experiencing food insecurity.

Based on the findings from this evidence review, it is critical that nutrition education programs center equity in all aspects of their program in order to ensure a culturally responsive program that supports an anti-racist praxis, including consideration of the population being reached, recruitment and implementation processes, intervention components, methods used for evaluation, and how to sustain and scale the program for improved dietary quality and food security among low-income populations in the charitable food system.



VII. References

1. French SA, Tangney CC, Crane MM, Wang Y, Appelhans BM. Nutrition quality of food purchases varies by household income: the SHoPPER study. *BMC Public Health*. 2019;19(1):231. doi:10.1186/s12889-019-6546-2
2. Leung CW, Ding EL, Catalano PJ, Villamor E, Rimm EB, Willett WC. Dietary intake and dietary quality of low-income adults in the Supplemental Nutrition Assistance Program. *Am J Clin Nutr*. 2012;96(5):977-988. doi:10.3945/ajcn.112.040014
3. Contento IR. Nutrition education: linking research, theory, and practice. *Asia Pac J Clin Nutr*. 2008;17 Suppl 1:176-179.
4. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household Food Security in the United States in 2021. Accessed October 31, 2022. <http://www.ers.usda.gov/publications/pub-details/?pubid=104655>
5. Odoms-Young AM. Examining the Impact of Structural Racism on Food Insecurity: Implications for Addressing Racial/Ethnic Disparities. *Fam Community Health*. 2018;41(Suppl 2 FOOD INSECURITY AND OBESITY):S3-S6. doi:10.1097/FCH.000000000000183
6. Biggerstaff MA, Morris PM, Nichols-Casebolt A. Living on the Edge: Examination of People Attending Food Pantries and Soup Kitchens. *Soc Work*. 2002;47(3):267-277. doi:10.1093/sw/47.3.267
7. Schwartz MB, Seligman HK. The Unrealized Health-Promoting Potential of a National Network of Food Pantries. *J Hunger Environ Nutr*. 2019;14(1-2):1-3. doi:10.1080/19320248.2019.1569819
8. Becerra MB, Mshigeni SK, Becerra BJ. The Overlooked Burden of Food Insecurity among Asian Americans: Results from the California Health Interview Survey. *Int J Environ Res Public Health*. 2018;15(8):1684. doi:10.3390/ijerph15081684
9. Higashi RT, Sood A, Conrado AB, Shahan KL, Leonard T, Pruitt SL. Experiences of increased food insecurity, economic and psychological distress during the COVID-19 pandemic among Supplemental Nutrition Assistance Program-enrolled food pantry clients. *Public Health Nutr*. Published online December 6, 2021:1-11. doi:10.1017/S1368980021004717
10. Fitzpatrick KM, Harris C, Drawve G, Willis DE. Assessing Food Insecurity among US Adults during the COVID-19 Pandemic. *J Hunger Environ Nutr*. 2021;16(1):1-18. doi:10.1080/19320248.2020.1830221
11. Morales DX, Morales SA, Beltran TF. Racial/Ethnic Disparities in Household Food Insecurity During the COVID-19 Pandemic: a Nationally Representative Study. *J Racial Ethn Health Disparities*. 2021;8(5):1300-1314. doi:10.1007/s40615-020-00892-7
12. Weinfield NS, Mills G, Borger C, et al. National Report Prepared for Feeding America. Published online 2014:177.
13. 2019 Feeding America Annual Report. Published online 2019. https://www.feedingamerica.org/sites/default/files/2020-06/FA_2019_AnnReport_d8.pdf
14. Byker Shanks C. Promoting Food Pantry Environments that Encourage Nutritious Eating Behaviors. *J Acad Nutr Diet*. 2017;117(4):523-525. doi:10.1016/j.jand.2016.12.020
15. Daponte BO, Lewis GH, Sanders S, Taylor L. Food Pantry Use among Low-Income Households in Allegheny County, Pennsylvania. *J Nutr Educ*. 1998;30(1):50-57. doi:10.1016/S0022-3182(98)70275-4
16. Robaina KA, Martin KS. Food insecurity, poor diet quality, and obesity among food pantry participants in Hartford, CT. *J Nutr Educ Behav*. 2013;45(2):159-164. doi:10.1016/j.jneb.2012.07.001
17. Bazerghi C, McKay FH, Dunn M. The Role of Food Banks in Addressing Food Insecurity: A Systematic Review. *J Community Health*. 2016;41(4):732-740. doi:10.1007/s10900-015-0147-5

18. Saiz AM, Aul AM, Malecki KM, et al. Food insecurity and cardiovascular health: Findings from a statewide population health survey in Wisconsin. *Prev Med*. 2016;93:1-6. doi:10.1016/j.ypmed.2016.09.002
19. Seligman HK, Laraia BA, Kushel MB. Food Insecurity Is Associated with Chronic Disease among Low-Income NHANES Participants. *J Nutr*. 2010;140(2):304-310. doi:10.3945/jn.109.112573
20. Micha R, Peñalvo JL, Cudhea F, Imamura F, Rehm CD, Mozaffarian D. Association Between Dietary Factors and Mortality From Heart Disease, Stroke, and Type 2 Diabetes in the United States. *JAMA J Am Med Assoc*. 2017;317(9):912-924. doi:10.1001/jama.2017.0947
21. Heflin CM, Siefert K, Williams DR. Food insufficiency and women's mental health: Findings from a 3-year panel of welfare recipients. *Soc Sci Med* 1982. 2005;61(9):1971-1982. doi:10.1016/j.socscimed.2005.04.014
22. Whitaker RC, Phillips SM, Orzol SM. Food Insecurity and the Risks of Depression and Anxiety in Mothers and Behavior Problems in their Preschool-Aged Children. *Pediatr Evanst*. 2006;118(3):e859-e868. doi:10.1542/peds.2006-0239
23. An R, Wang J, Liu J, Shen J, Loehmer E, McCaffrey J. A systematic review of food pantry-based interventions in the USA. *Public Health Nutr*. 2019;22(09):1704-1716. doi:10.1017/S1368980019000144
24. Seligman HK, Smith M, Rosenmoss S, Marshall MB, Waxman E. Comprehensive Diabetes Self-Management Support From Food Banks: A Randomized Controlled Trial. *Am J Public Health*. 2018;108(9):1227-1234. doi:10.2105/AJPH.2018.304528
25. Simmet A, Depa J, Tinnemann P, Stroebele-Benschop N. The Dietary Quality of Food Pantry Users: A Systematic Review of Existing Literature. *J Acad Nutr Diet*. 2016;117(4):563-576. doi:10.1016/j.jand.2016.08.014
26. Nutrition in Food Banking Toolkit. Hunger and Health. Accessed January 12, 2022. <https://hungerandhealth.feedingamerica.org/resource/nutrition-in-food-banking-toolkit/>
27. Cooksey-Stowers K, Read M, Wolff M, Martin KS, McCabe M, Schwartz M. Food Pantry Staff Attitudes about Using a Nutrition Rating System to Guide Client Choice. *J Hunger Environ Nutr*. 2019;14(1-2):35-49. doi:10.1080/19320248.2018.1512930
28. SNAP-Ed Connection | Home. Accessed February 3, 2023. <https://snaped.fns.usda.gov/>
29. About EFNEP. National Institute of Food and Agriculture. Accessed February 3, 2023. <http://www.nifa.usda.gov/grants/programs/capacity-grants/efnep/about-efnep>
30. Oliver TL, McKeever A, Shenkman R, Diewald L. Barriers to Healthy Eating in a Community That Relies on an Emergency Food Pantry. *J Nutr Educ Behav*. 2020;52(3):299-306. doi:10.1016/j.jneb.2019.10.005
31. Gaglio B, Shoup JA, Glasgow RE. The RE-AIM Framework: A Systematic Review of Use Over Time. *Am J Public Health*. 2013;103(6):e38-e46. doi:10.2105/AJPH.2013.301299
32. Byrd-Bredbenner C, Wu F, Spaccarotella K, Quick V, Martin-Biggers J, Zhang Y. Systematic review of control groups in nutrition education intervention research. *Int J Behav Nutr Phys Act*. 2017;14(1):91-91. doi:10.1186/s12966-017-0546-3
33. Story MT, Duffy E. Supporting Healthy Eating: Synergistic Effects of Nutrition Education Paired with Policy, Systems, and Environmental Changes. *Nutr Educ Strateg Improv Nutr Healthy Eat Individ Communities*. 2020;92:69-81. doi:10.1159/000499549
34. Centers for Disease Control and Prevention. What is Health Equity? 2021. Accessed January 15, 2022. <https://www.cdc.gov/healthequity/whatis/index.html>
35. Umoren J, Basseur K, Yao P, et al. Food Pantries Integrating Eating Competence, Interest/Enjoyment in Physical Activity and Self-Efficacy for Pantry Participants. *J Nutr Educ Behav*. 2020;52(2):195-198. doi:10.1016/j.jneb.2019.10.003

36. Martin KS, Redelfs A, Wu R, Bogner O, Whigham L. Offering More Than Food: Outcomes and Lessons Learned from a Fresh Start food pantry in Texas. *J Hunger Environ Nutr.* 2019;14(1-2):70-81. doi:10.1080/19320248.2018.1512925
37. Ko LK, Rodriguez E, Yoon J, Ravindran R, Copeland WK. A Brief Community-Based Nutrition Education Intervention Combined With Food Baskets Can Increase Fruit and Vegetable Consumption Among Low-Income Latinos. *J Nutr Educ Behav.* 2016;48(9):609-617.e1. doi:10.1016/j.jneb.2016.06.010
38. Stotz S, Lee JS, Hall J. A mixed-methods evaluation using low-income adult Georgians' experience with a smartphone-based eLearning nutrition education programme. *Public Health Nutr.* 2018;21(17):3271-3280. doi:10.1017/S1368980018001933
39. Seligman HK, Lyles C, Marshall MB, et al. A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients In Three States. *Health Aff Proj Hope.* 2015;34(11):1956-1963. doi:10.1377/hlthaff.2015.0641
40. Aiyer JN, Raber M, Bello RS, et al. A pilot food prescription program promotes produce intake and decreases food insecurity. *Transl Behav Med.* 2019;9(5):922-930. doi:10.1093/tbm/ibz112
41. Vander Wyst KB, Vercelli ME, O'Brien KO, Cooper EM, Pressman EK, Whisner CM. A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women. *PLoS One.* 2019;14(10):e0223120. doi:10.1371/journal.pone.0223120
42. Sanderson J, Martin KS, Colantonio AG, Wu R. An Outcome Evaluation of Food Pantries Implementing the More than Food Framework. *J Hunger Environ Nutr.* 2020;15(4):443-455. doi:10.1080/19320248.2020.1748782
43. Klinedinst NJ. Effects of a nutrition education program for urban, low-income, older adults: a collaborative program among nurses and nursing students. *J Community Health Nurs.* 2005;22(2):93-104. doi:10.1207/s15327655jchn2202_3
44. McClelland JW, Irving LM, Mitchell RE, Bearon LB, Webber KH. Extending the reach of nutrition education for older adults: feasibility of a Train-the-Trainer approach in congregate nutrition sites. *J Nutr Educ Behav.* 2002;34 Suppl 1:S48-52. doi:10.1016/s1499-4046(06)60311-4
45. Wright L, Arce KS, Himmelgreen D, Epps JB. Farm2Fork: Use of the Health Belief Model to Increase Fresh Fruit and Vegetable Intake Among Food Pantry Participants. *J Hunger Environ Nutr.* 2019;14(1-2):252-261. doi:10.1080/19320248.2018.1538920
46. Hardison-Moody A, Bowen S, Bloom JD, Sheldon M, Jones L, Leach B. Incorporating Nutrition Education Classes into Food Pantry Settings: Lessons Learned in Design and Implementation. *J Ext.* 2015;53(6).
47. Taylor T, Serrano E, Anderson J, Kendall P. Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program. *J Community Health.* 2000;25(3):241-262. doi:10.1023/a:1005160216289
48. Rustad C, Smith C. Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women. *J Nutr Educ Behav.* 2013;45(6):490-498. doi:10.1016/j.jneb.2013.06.009
49. Dickin KL, Hill TF, Dollahite JS. Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents. *J Acad Nutr Diet.* 2014;114(6):945-950. doi:10.1016/j.jand.2013.09.029
50. Caspi CE, Davey C, Friebur R, Nanney MS. Results of a Pilot Intervention in Food Shelves to Improve Healthy Eating and Cooking Skills Among Adults Experiencing Food Insecurity. *J Hunger Environ Nutr.* 2017;12(1):77-88. doi:10.1080/19320248.2015.1095146
51. Ryan-Ibarra S, DeLisio A, Bang H, et al. The US Supplemental Nutrition Assistance Program - Education improves nutrition-related behaviors. *J Nutr Sci.* 2020;9:e44. doi:10.1017/jns.2020.37

52. Thompson DA, Joshi A, Hernandez RG, et al. Nutrition education via a touchscreen: a randomized controlled trial in Latino immigrant parents of infants and toddlers. *Acad Pediatr*. 2012;12(5):412-419. doi:10.1016/j.acap.2012.03.020
53. Tessaro I, Rye S, Parker L, Mangone C, McCrone S. Effectiveness of a nutrition intervention with rural low-income women. *Am J Health Behav*. 2007;31(1):35-43. doi:10.5555/ajhb.2007.31.1.35
54. Martin KS, Wu R, Wolff M, Colantonio AG, Grady J. A Novel Food Pantry Program: Food Security, Self-Sufficiency, and Diet-Quality Outcomes. *Am J Prev Med*. 2013;45(5):569-575. doi:10.1016/j.amepre.2013.06.012
55. Boyd NR, Windsor RA. A formative evaluation in maternal and child health practice: the Partners for Life Nutrition Education Program for pregnant women. *Matern Child Health J*. 2003;7(2):137-143. doi:10.1023/a:1023873112024
56. Dollahite JS, Pijai EI, Scott-Pierce M, Parker C, Trochim W. A randomized controlled trial of a community-based nutrition education program for low-income parents. *J Nutr Educ Behav*. 2014;46(2):102-109. doi:10.1016/j.jneb.2013.09.004
57. Lohse B, Belue R, Smith S, Wamboldt P, Cunningham-Sabo L. About Eating: an online program with evidence of increased food resource management skills for low-income women. *J Nutr Educ Behav*. 2015;47(3):265-272. doi:10.1016/j.jneb.2015.01.006
58. Martin K, Shuckerow M, O'Rourke C, Schmitz A. Changing the conversation about hunger: the process of developing Freshplace. *Prog Community Health Partnersh Res Educ Action*. 2012;6(4):429-434. doi:10.1353/cpr.2012.0056
59. Neuenschwander LM, Abbott A, Mobley AR. Comparison of a web-based vs in-person nutrition education program for low-income adults. *J Acad Nutr Diet*. 2013;113(1):120-126. doi:10.1016/j.jand.2012.07.034
60. Mitchell RE, Ash SL, McClelland JW. Nutrition education among low-income older adults: a randomized intervention trial in Congregate Nutrition sites. *Health Educ Behav Off Publ Soc Public Health Educ*. 2006;33(3):374-392. doi:10.1177/1090198105276212
61. Rivera RL, Maulding MK, Abbott AR, Craig BA, Eicher-Miller HA. SNAP-Ed (Supplemental Nutrition Assistance Program-Education) Increases Long-Term Food Security among Indiana Households with Children in a Randomized Controlled Study. *J Nutr*. 2016;146(11):2375-2382. doi:10.3945/jn.116.231373
62. Eicher-Miller HA, Mason AC, Abbott AR, McCabe GP, Boushey CJ. The effect of Food Stamp Nutrition Education on the food insecurity of low-income women participants. *J Nutr Educ Behav*. 2009;41(3):161-168. doi:10.1016/j.jneb.2008.06.004
63. McClelland JW, Jayaratne KSU, Bird C. Use of song as an effective teaching strategy for nutrition education in older adults. *J Nutr Gerontol Geriatr*. 2015;34(1):22-33. doi:10.1080/21551197.2014.998327
64. Clarke P, Evans SH, Neffa-Creech D. Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial. *Public Health Nutr*. 2019;22(4):714-725. doi:10.1017/S1368980018003117
65. Cox RH, White AH, Gaylord CK. A video lesson series is effective in changing the dietary intakes and food-related behaviors of low-income homemakers. *J Am Diet Assoc*. 2003;103(11):1488-1493. doi:10.1016/S0002
66. Olvera N, Bush JA, Sharma SV, Knox BB, Scherer RL, Butte NF. BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families. *Obes Silver Spring Md*. 2010;18 Suppl 1:S102-104. doi:10.1038/oby.2009.439
67. Pooler JA, Morgan RE, Wong K, Wilkin MK, Blitstein JL. Cooking Matters for Adults Improves Food Resource Management Skills and Self-confidence Among Low-Income Participants. *J Nutr Educ Behav*. 2017;49(7):545-553.e1. doi:10.1016/j.jneb.2017.04.008

68. Yao P, Ozier A, Bresseur K, Robins S, Adams C, Bachar D. Food Pantry Nutrition Education about Whole Grains and Self-Efficacy. *Fam Consum Sci Res J*. 2013;41(4):426-437. doi:10.1111/fcsr.12028
69. Adedokun OA, Plonski P, Jenkins-Howard B, Cotterill DB, Vail A. Healthy Choices for Every Body Adult Curriculum Improves Participants' Food Resource Management Skills and Food Safety Practices. *J Nutr Educ Behav*. 2018;50(6):638-644. doi:10.1016/j.jneb.2018.02.005
70. Grabow KN, Schumacher J, Banning J, Barnes JL. Highlighting Healthy Options in a Food Pantry Setting: A Pilot Study. *Fam Consum Sci Res J*. 2020;48(3):263-275. doi:10.1111/fcsr.12348
71. Clarke P, Evans SH, Hovy EH. Indigenous message tailoring increases consumption of fresh vegetables by clients of community pantries. *Health Commun*. 2011;26(6):571-582. doi:10.1080/10410236.2011.558337
72. Rublee M, Yerxa K, White A, Bolton J, Savoie K. Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants. *J Ext*. 2019;57(2). <https://tigerprints.clemson.edu/joe/vol57/iss2/10>
73. Murphy PW, Davis TC, Mayeaux EJ, Sentell T, Arnold C, Rebouche C. Teaching nutrition education in adult learning centers: linking literacy, health care, and the community. *J Community Health Nurs*. 1996;13(3):149-158. doi:10.1207/s15327655jchn1303_2
74. Evans SH, Clarke P. Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries. *Nonprofit Volunt Sect Q*. 2010;39(3):524-535. doi:10.1177/0899764009333053
75. Jantz C, Anderson J, Gould SM. Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants. *J Nutr Educ Behav*. 2002;34(5):252-260. doi:10.1016/s1499-4046(06)60103-6
76. Stein EC, Stowers KC, McCabe ML, White MA, Schwartz MB. Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods. *Public Health Nutr*. 2019;22(9):1717-1722. doi:10.1017/S1368980019000259
77. Rifkin R, Lohse B, Bagdonis J, Stotts J. Digital photo receivers are a viable technology for nutrition education of low-income persons. *J Nutr Educ Behav*. 2006;38(5):326-328. doi:10.1016/j.jneb.2006.04.145
78. Keller-Olaman SJ, Edwards V, Elliott SJ. Evaluating a food bank recipe-tasting program. *Can J Diet Pract Res Publ Dietit Can Rev Can Prat Rech En Diet Une Publ Diet Can*. 2005;66(3):183-186. doi:10.3148/66.3.2005.183
79. Murphy B. From Garden to Recipient: A Direct Approach to Nutrition Education. *J Ext*. 2013;51(5).
80. Coombs C, Savoie-Roskos MR, LeBlanc H, Gast J, Hendrickson J. Nudging Urban Food Pantry Users in Utah Toward Healthier Choices. *Health Promot Pract*. 2021;22(5):685-691. doi:10.1177/1524839920904688
81. Moore CJ, Lindke A, Cox GO. Using Sensory Science to Evaluate Consumer Acceptance of Recipes in a Nutrition Education Intervention for Limited Resource Populations. *J Nutr Educ Behav*. 2020;52(2):134-144. doi:10.1016/j.jneb.2019.07.012
82. Devine C, Brunson R, Jastran M, Bisogni C. It just really clicked: participant-perceived outcomes of community nutrition education programs. *J Nutr Educ Behav*. 2006;38(1):42-49. doi:10.1016/j.jneb.2005.11.017
83. Lu I, Hanson KL, Jilcott Pitts SB, et al. Perceptions of nutrition education classes offered in conjunction with a community-supported agriculture intervention among low-income families. *Public Health Nutr*. 2021;24(10):3028-3036. doi:10.1017/S1368980020002773
84. Harmon AH, Grim BJ, Gromis JC. Improving Nutrition Education Newsletters for the Food Stamp Eligible Audience. *Health Promot Pract*. 2007;8(4):394-402. doi:10.1177/1524839907304942
85. Oliver TL, McKeever A, Shenkman R, Diewald LK. Successes and challenges of using a peer Mentor model for nutrition education within a food pantry: a qualitative study. *BMC Nutr*. 2020;6:27. doi:10.1186/s40795-020-00352-9

86. Kaiser L, Martinez J, Horowitz M, et al. Adaptation of a culturally relevant nutrition and physical activity program for low-income, Mexican-origin parents with young children. *Prev Chronic Dis*. 2015;12:E72. doi:10.5888/pcd12.140591
87. Cena ER, Joy AB, Heneman K, et al. Learner-centered nutrition education improves folate intake and food-related behaviors in nonpregnant, low-income women of childbearing age. *J Am Diet Assoc*. 2008;108(10):1627-1635. doi:10.1016/j.jada.2008.07.017
88. Gans KM, Risica PM, Keita AD, et al. Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the “Live Well, Viva Bien” cluster-randomized trial. *Int J Behav Nutr Phys Act*. 2018;15(1):80. doi:10.1186/s12966-018-0704-2
89. Savoie MR, Mispireta M, Rankin LL, Neill K, LeBlanc H, Christofferson D. Intention to change nutrition-related behaviors in adult participants of a Supplemental Nutrition Assistance Program-Education. *J Nutr Educ Behav*. 2015;47(1):81-85. doi:10.1016/j.jneb.2014.08.009
90. Anding, Jenna, Fletcher, Rickie D, Van Laanen, Peggy, Supak, Cheryl. The Food Stamp Nutrition Education Program’s (FSNEP) Impact on Selected Food and Nutrition Behaviors Among Texans. Accessed February 3, 2023. <https://archives.joe.org/joe/2001december/rb4.php>
91. Hecht AA, Biehl E, Buzogany S, Neff RA. Using a trauma-informed policy approach to create a resilient urban food system. *Public Health Nutr*. 2018;21(10):1961-1970. doi:10.1017/S1368980018000198
92. Bowen EA, Murshid NS. Trauma-Informed Social Policy: A Conceptual Framework for Policy Analysis and Advocacy. *Am J Public Health 1971*. 2016;106(2):223-229. doi:10.2105/AJPH.2015.302970
93. Kolavalli C. Whiteness and Food Charity: Experiences of Food Insecure African-American Kansas City Residents Navigating Nutrition Education Programs. *Hum Organ*. 2019;78(2):99-109. doi:10.17730/0018-7259.78.2.99
94. Santiago C, Gunen B, Yan S, Poirier L, Gu Y, Gittelsohn J. Availability and Perceived Barriers to Providing Nutrition Education Resources in Food Pantries in Baltimore (FS02-03-19). *Curr Dev Nutr*. 2019;3(Supplement_1):nzz051.FS02-03-19. doi:10.1093/cdn/nzz051.FS02-03-19
95. Hill TF, Stark CM, Sellers DE, Dollahite JS. Training Needs of Nutrition Educators Engaged in Policy, Systems, and Environmental Approaches. *J Nutr Educ Behav*. 2020;52(12):1131-1138. doi:10.1016/j.jneb.2020.07.007
96. Petosa RL, Smith LH. Peer Mentoring for Health Behavior Change: A Systematic Review. *Am J Health Educ*. 2014;45(6):351-357. doi:10.1080/19325037.2014.945670
97. Baker S, Auld G, Ammerman A, Lohse B, Serrano E, Wardlaw MK. Identification of a Framework for Best Practices in Nutrition Education for Low-Income Audiences. *J Nutr Educ Behav*. 2020;52(5):546-552. doi:10.1016/j.jneb.2019.12.007
98. Dient Taillepierre JC, Liburd L, O’Connor A, et al. Toward Achieving Health Equity: Emerging Evidence and Program Practice. *J Public Health Manag Pract*. 2016;22 Suppl 1:S43-49. doi:10.1097/PHH.0000000000000375
99. Home. Leah’s Pantry. Accessed February 3, 2023. <https://leahspantry.org/>
100. Around the Table – SNAP-Ed Toolkit. Accessed January 15, 2023. <https://snapedtoolkit.org/interventions/programs/around-the-table/>
101. A Taste of African Heritage – SNAP-Ed Toolkit. Accessed January 15, 2023. <https://snapedtoolkit.org/interventions/programs/a-taste-of-african-heritage/>
102. Reicks M, Gold A, Tran N, LeBlanc K. Impacts of A Taste of African Heritage: A Culinary Heritage Cooking Course. *J Nutr Educ Behav*. 2022;54(5):388-396. doi:10.1016/j.jneb.2021.11.008

VIII. Appendices



Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
A Brief Community-Based Nutrition Education Intervention Combined With Food Baskets Can Increase Fruit and Vegetable Consumption Among Low-Income Latinos+A4:L59	Ko LK, Rodriguez E, Yoon J, Ravindran R, Copeland WK. A Brief Community-Based Nutrition Education Intervention Combined With Food Baskets Can Increase Fruit and Vegetable Consumption Among Low-Income Latinos. J Nutr Educ Behav. 2016;48(9):609-617.e1. doi:10.1016/j.jneb.2016.06.010	Ko et al, 2017	Nuestras Comidas is a nutrition and healthy cooking focused intervention, using social cognitive theory to emphasize reciprocal determinism. Community Health Educators delivered the intervention with four components: 1) group discussion to enhance positive values, 2) outcome expectations, knowledge and skills on eating healthy, cooking demonstrations to build self efficacy for healthy cooking, 3) take home food baskets and 4) targeted newsletters to reinforce learned skills.	One Group: Pre/ Post, Qualitative	1. Group discussions 2. Cooking demonstrations 3. Take home food baskets 4. Written education materials 5. Nutrition knowledge 6. Positive values 7. Healthy eating skills	Frequency: 90 minutes sessions, 2x/month Duration: 8 weeks	N: 40 Age Range: 26.2-48.3 Age (Mean ± SD): 37.8 ± 10.5 Gender/Sex: 98% Female, 2% Male Race/Ethnicity: 100% Latinx/Hispanic Specific Population/SES: low-income, Latinx Participation Rate: 93% Inclusion/Exclusion criteria (% excluded): Low income, 18 years and older, Latinx, proficient in Spanish, reported being main person who cooks for their family, not pregnant Education: 15% 1-6 years; 20% 7-9 years, 30% 10-12 years; 35% ≥ 13 years Location: Seattle, WA	Type of Intervention: nutrition education with cooking demonstration Delivery Method: in-person, group Frequency: 4 90 minutes sessions, 2x/month Duration: 8 weeks Data Collection Method: survey/questionnaire, focus groups Attrition Rate (total N and remaining): 93% Theoretical Model: Social Cognitive Theory	Research Setting: community organization Program Delivered By: bilingual community health educators Partners: n/a Partnership Role: n/a	Primary outcome: (descriptive with statistical values): ↑ knowledge, ↔ perceived barriers, ↑ food efficacy, ↔ food outcomes, ↑ fruit consumption, ↑ vegetable consumption Statistical Model: McNemar exact test, Milcoxon signed-rank test, paired t test	Follow up period: 1 week after intervention, 12 weeks after intervention
A formative evaluation in maternal and child health practice: the Partners for Life Nutrition Education Program for pregnant women	Boyd NR, Windsor RA. A formative evaluation in maternal and child health practice: the Partners for Life Nutrition Education Program for pregnant women. Matern Child Health J. 2003;7(2):137-143. doi:10.1023/a:1023873112024	Boyd et al, 2003	The formative evaluation of an EFNEP methodology adapted to change dietary behavior of low income pregnant women in the Mississippi Delta region.	Randomized Control Trial	1. Maternal and infant nutrition 2. Health problems and solutions 3. Eating healthy and healthy baby 4. How to make decisions 5. Saving for mother and baby 6. Food, friends and fun 7. Caring for baby 8. Preparation for delivery	Frequency: Weekly session, 60 minutes each Duration: 8 weeks	N: 240 (Intervention: 120, Control: 120) Age Range: not provided Age (Mean ± SD): Completed Program: Intervention: 22 years, Control: 23 years; Not Completing Program: Intervention: 20.7 years, Control 20.9 years (no SD provided) Gender/Sex: 100% Female Race/Ethnicity: Completed Program: Intervention Black 92%, White 8%, Control Black 92%, White 8%; Not Completing Program: Intervention Black 91%, White 9%, Control Black 90%, White 10% Specific Population/SES: Low-income, WIC eligible pregnant women Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Low income, WIC eligible, pregnant women in the Mississippi Delta region who were receiving maternity care at the county health department. Education: Completed Program: Intervention: 11 years, Control: 11 years; Not Completing Program: Intervention: 10.3 years, Control 10.1 years (no SD provided) Location: Delta Region, Mississippi	Type of Intervention: Nutrition education Delivery Method: in person, 1:1 Frequency: Weekly session, 60 minutes each Duration: 8 weeks Data Collection Method: pre/post test, focus group Attrition Rate (total N and remaining): 47% Theoretical Model: No Theory Mentioned	Research Setting: clients' homes Program Delivered By: Peer Educators Partners: Advisory Committee (other health care providers) and Freedom From Hunger Foundation Partnership Role: Committee - developed education program and implementation plan; Freedom From Hunger Foundation funded the study	Statistical Model: n/a due to low sample sizes Primary outcome: (descriptive with statistical values): Nutrition knowledge ↑*, self-reported dietary behavior ↑*	Follow up period (3, 6, 12 months, etc): n/a
A mixed-methods evaluation using low-income adult Georgians' experience with a smartphone-based eLearning nutrition education programme	Stotz S, Lee JS, Hall J. A mixed-methods evaluation using low-income adult Georgians' experience with a smartphone-based eLearning nutrition education programme. Public Health Nutr. 2018;21(17):3271-3280. doi:10.1017/S136889018001933	Stotz et al, 2018	A formative evaluation of a smartphone-based eLearning nutrition education programme, Food eTalk, for low-income adult Georgians.	One Group: Pre/ Post, Qualitative	1. Smart phone nutrition education a. Didactic lesson b. Interactive activities c. Cooking demonstration d. Recipe taste-testing 2. DASH diet principle lesson topics: a. Promotion of fruits, vegetables and low-fat dairy b. Consumption and limiting dietary sodium c. Family-based physical activity d. Food safety in the home e. Food-resource management principle	Frequency: 6, 25 minute lessons Duration: 3 weeks	N: 64 (all intervention) Age Range: not provided Age (Mean ± SD): 38.5 ± 13.5 Gender/Sex: 96.8% Female, 3.2% Male Race/Ethnicity: 10.9% Latino/Hispanic, 54.6% Non-Hispanic Black, 32.8% Non-Hispanic White, 1.5% Other, 10.9% Missing Data Specific Population/SES: Low income, SNAP Ed Eligible Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Eligible for SNAP-Ed as determined by household income, participant zip code or participation in other qualifying programs such as WIC or Head Start, and ≥18 years of age. Education: 48.4% less than or equal to 12th grade education Location: Georgia	Type of Intervention: Nutrition education Delivery Method: Online Frequency: 6, 25 minute lessons Duration: 3 weeks Data Collection Method: Survey/questionnaire, Interviews, Focus Groups, Tracking eLearning Program Usage Attrition Rate (total N and remaining): 78% Theoretical Model: Health Belief Model, contextual learning opportunities	Research Setting: Remote Program Delivered By: smartphone application Partners: University of GA, Head Start programs, public libraries, parenting support groups, general education diploma program, safety-net clinics, faith based organizations Partnership Role: assisted with recruitment	Statistical Model: Qualitative interview data were analysed by codes, categories and themes Primary outcome: (descriptive with statistical values): easy to navigate ↑, motivation to engage ↔, accessibility to access information ↑, the need for financial incentives ↓, difficulty in applying knowledge to change nutrition related behavior ↓	Follow up period (3, 6, 12 months, etc): 3 weeks after the intervention

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
A Novel Food Pantry Program Food Security, Self-Sufficiency, and Diet-Quality Outcomes	Martin KS, Wu R, Wolf M, Colantonio AG, Grady J. A novel food pantry program: food security, self-sufficiency, and diet-quality outcomes. <i>Am J Prev Med.</i> 2013;45(5):569-575. doi:10.1016/j.amepre.2013.06.012	Martin et al, 2013	Evaluate a new food pantry intervention Freshplace to improve food security, self-sufficiency, and diet quality.	Randomized Control Trial	1. Client choice pantry 2. Monthly meetings with project manager 3. Targeted referrals to community services (including on-site cooking class)	Frequency: 2x/ month for client choice pantry, 1x/ month to meet with project manager, and community services as needed Duration: 12 months	N: 228 (Intervention N: 113 ; Control N: 115) Age Range: not provided Age (Mean ± SD): Control: 51.2 ± 11.8; Intervention: 51.8 ± 12.0 Gender/Sex: Control: 58.3% Female, 41.7% Male; Intervention: 61.1% Female, 38.9% Male Race/Ethnicity: Control: 73% Black, 21% West Indian, 8.7% Other/Mixed; Intervention: 71.7% Black, 19.5% West Indian, 9.8% Other/Mixed Specific Population/SES: Low income, food pantry recipients Participation Rate: 67% at 3 months; 61% at 12 months Inclusion/Exclusion criteria (% excluded): Residents of North End of Hartford, CT, visits one of two local food pantries; excluded based on zip code (6%) Education: 43.5% less than high school/GED, 57.5% high school/GED or greater Location: North end of Hartford, Connecticut	Type of Intervention: a client-choice pantry, monthly meetings with a project manager to receive motivational interviewing, and targeted referrals to community services Delivery Method: in-person, group Frequency: 2x/month for client choice pantry, 1x/month to meet with project manager, and community services as needed Duration: 12 months Data Collection Method: survey/questionnaire, focus groups Attrition Rate (total N and remaining): 66% intervention group; 57% control group at 3 months follow-up Theoretical Model: Social Cognitive Theory & Stages of Change Model	Research Setting: Food banks Program Delivered By: project managers trained in motivational interviewing Partners: Foodshare; Chrysalis Center, Inc.; and the Junior League of Hartford, Inc; University of Connecticut Partnership Role: community agencies	Primary outcome: (descriptive with statistical values): ↑* self-sufficiency, ↑* consumption, ↑* food security. Statistical Model: multivariate regression models	Follow up period: every 3 months for 12 months
A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients In Three States	Seligman HK, Lyles C, Marshall MB, et al. A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients In Three States. <i>Health Aff (Millwood).</i> 2015;34(11):1956-1963. doi:10.1377/hlthaff.2015.0641	Seligman et al, 2015	Explore the feasibility of using food banks and pantries to provide diabetes support through four major components: screening for diabetes and monitoring of glycemic control, distributing diabetes-appropriate food once or twice monthly, referring clients who lacked a usual source of care to primary care providers, and providing diabetes self-management support and education.	One Group: Pre/ Post	1. Diabetic appropriate foods 2. Blood sugar monitoring 3. Primary care referral 4. Self management support	Frequency: every 1-2 weeks depending on household size Duration: 6 months	N: 687 (396 with uncontrolled HbA1c) Age Range: not provided Age (Mean ± SD): All participants: 56.6 years; Uncontrolled HbA1c 54.3 years Gender/Sex: All participants: 74% Female, 26% Male; Uncontrolled HbA1c 75% Female, 25% Male Race/Ethnicity: All participants: 53% Latino/Hispanic, 25% White, 12% Black, 10% Native American/Asian/Other; Uncontrolled HbA1c 56% Latino/Hispanic, 21% White, 14% Black, 8% Native American/Asian/Other Specific Population/SES: Food insecure individuals with diabetes Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Inclusion criteria: HbA1c ≥ 6.5% or a self-reported diagnosis of diabetes plus presentation of one or more diabetes medication bottles. Primary care providers in the clinics verified whether people with diabetes were food insecure. Exclusion criteria: younger than age eighteen, unable to complete surveys in English or Spanish, or pregnant and those whose cognitive status was so impaired as to interfere with survey administration. Education: 41% less than high school/GED, 21% high school/GED, 37% more than high school/GED Location: The intervention was implemented at three food banks: the Food Bank of Corpus Christi (site 1), in Texas; the Redwood Empire Food Bank (site 2), in Santa Rosa, California; and the Mid-Ohio Foodbank (site 3), in Grove City	Type of Intervention: Diabetes management through tailored food pantry boxes Delivery Method: 1:1 Frequency: every 1-2 weeks depending on household size Duration: 6 months Data Collection Method: Survey/questionnaire, biochemical Attrition Rate (total N and remaining): 58% Theoretical Model: No theory mentioned	Research Setting: Food banks Program Delivered By: Trained food bank personnel Partners: Feeding America, University of California, San Francisco Partnership Role: Selecting participating food bank locations	Statistical Model: T test, chi square test, McNemar's test Primary outcome: (descriptive with statistical values): HbA1c ↓* Secondary outcomes measured (descriptive with statistical values): Fruit and vegetable intake ↑*, self efficacy ↑*, diabetes distress ↓*, Medication nonadherence ↓*, severe hypoglycemic episodes ↓	Follow up period (3, 6, 12 months, etc): 6 months
A pilot food prescription program promotes produce intake and decreases food insecurity	Aiyer JN, Raber M, Bello RS, et al. A pilot food prescription program promotes produce intake and decreases food insecurity. <i>Transl Behav Med.</i> 2019;9(5):922-930. doi:10.1093/tbm/ibz112	Aiyer et al, 2019	The purpose of this pilot study is to examine the feasibility, perceptions, and impact of a collaborative food prescription program in an area with a high rate of food insecurity.	One Group: Pre/ Post, Qualitative	1. Nutrition education materials (English and Spanish) 2. Client choice take home of fresh produce and healthy nonperishable food items 4. Orientation walk-through of pantry 5. Nutritional nudges and labeling in pantry	Frequency: Every 2 weeks Duration: 6 months	N: 242 Age Range: not reported Age (Mean ± SD): 47.3 ± 13.6 Gender/Sex: 79.1% female, 20.9% male Race/Ethnicity: 3.5% African American, 79.7% Hispanic Specific Population/SES: Low income, food insecure Participation Rate: 73.1% Inclusion/Exclusion criteria (% excluded): Receiving care at school-based or federally qualified health center, 18 years or older, food insecure based on two question clinic screener, resided in one of three targeted zip codes in North Pasadena Education: not provided Location: North Pasadena, TX	Type of Intervention: Food prescription and nutrition education Delivery Method: in person Frequency: Every 2 weeks Duration: 6 months Data Collection Method: Survey/Questionnaire, Interviews Attrition Rate (total N and remaining): 71.1% Theoretical Model: No theory mentioned	Research Setting: Safety-net clinics Program Delivered By: Designated clinic staff and food pantry volunteers Partners: Harris County BUILD Health Partnership (Harris County BUILD) Partnership Role: Funded study	Statistical Model: unpaired t-test Primary outcome: (descriptive with statistical values): Food insecurity ↓*, nutrition education ↑, usage of foods provided ↑, estimated weekly savings on groceries ↑	Follow up period (3, 6, 12 months, etc): n/a

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
A Randomized Controlled Trial of a Community-Based Nutrition Education Program for Low-Income Parents	Dollahite JS, Pijai EI, Scott-Pierce M, Parker C, Trochim W. A randomized controlled trial of a community-based nutrition education program for low-income parents. J Nutr Educ Behav. 2014;46(2):102-109. doi:10.1016/j.jneb.2013.09.004	Dollahite et al, 2014	The current study was designed to assess the effect of EFNEP education on reported nutrition behaviors and longitudinal retention of reported behavior change.	Randomized Control Trial	1. Weekly nutrition education sessions: <ol style="list-style-type: none"> Portion sizes MyPyramid and grains Fruits and vegetables Meat and beans Low-fat milk Food safety Food shopping and menu planning Feeding children 	Frequency: Weekly Duration: 8 weeks	N: 168 (Immediate education 85, Delayed education 83) Age Range: Enrolled: <29 years 52 (31%), 30-39 years 57 (33.9%), 40-49 years 37 (22%), >50 years 22 (13.1%). Completed <29 years 37 (27.6%), 30-39 years 43 (32.1%), 40-49 years 32 (23.9%), >50 years 22 (16.4%). Age (Mean ± SD): not provided Gender/Sex: Enrolled: 82.5% female, 1.5% male; Completed: 66.5% female, 0.5% male Race/Ethnicity: Enrolled: 5.5% Black, 73.5% Hispanic, 5% Other. Completed: 4.5% Black, 60% Hispanic, 2.5% Other Specific Population/SES: Low income, EFNEP eligible Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Participants were 18 years of age or older, not previously enrolled in EFNEP, willing to accept random assignment, and available to participate over 6 months. Education: not provided Location: New York City	Type of Intervention: Nutrition Education Delivery Method: In person, group Frequency: Weekly Duration: 8 weeks Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): 79.8% (134 of 168: 74 IE, 60 DE) Theoretical Model: Adult Learning Theory	Research Setting: Schools, governmental organization Program Delivered By: Paraprofessional educators Partners: Head start Partnership Role: Recruitment	Statistical Model: Chi-square analysis, analyses of variance, multiple regression analyses Primary outcome: (descriptive with statistical values): ↑ self-reported frequency of behavior on nutrition, food resource management, food safety, and food security constructs	Follow up period (3, 6, 12 months, etc): 8 weeks
A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women	Vander WYST KB, Vercelli ME, O'Brien KO, Cooper EM, Pressman EK, Whisner CM. A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women. PLoS One. 2019;14(10):e0223120.	Vander WYST et al, 2019	An 18-week longitudinal social media intervention addressing nutrition knowledge and behaviors of low-income, pregnant adolescents and adult women.	One group: Pre/ Post	1. Information about nutrition knowledge and behaviors: <ol style="list-style-type: none"> Pregnancy fitness Healthy recipes Nutrition Pregnancy fun facts Stress management 	Frequency: 6x/ week Duration: 18 weeks	N: 24 (12 adolescents, 12 adults) Age Range: Adolescents 16.97 (16.40, 17.73); Adults 29.20 (23.71, 33.75) Median (25%, 75%) Age (Mean ± SD): Not provided Gender/Sex: 100% female Race/Ethnicity: White 33.3%, Black 52.3%, Hispanic 14.3%, Missing 4.8%* Specific Population/SES: Low income pregnant adolescents Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Pregnant women carrying a single fetus who were between 12–28 weeks of gestation. Low-income, pregnant adolescents aged 14–18 years of age and low-to-medium income pregnant adults aged 19+. Exclusion criteria for the study included having a history of malabsorptive diseases, eating disorders, HIV infection, diabetes, high blood pressure, or current cigarette use. Education: Not provided Location: Rochester, NY	Type of Intervention: Nutrition education Delivery Method: remote Frequency: 6x/week Duration: 18 weeks Data Collection Method: pre-post intervention interviews, nutrition knowledge and health belief questionnaires, and 24-hour diet recalls Attrition Rate (total N and remaining): 91.7% (22 of original 24: 10 adolescents, 12 adults) Theoretical Model: Social Cognitive Theory/Social Learning Theory	Research Setting: Remote (intervention delivered via text, FB or mail) Program Delivered By: Remote Partners: Rochester Adolescent Maternity Program (RAMP), Rochester inner-city prenatal clinic Partnership Role: Recruitment	Statistical Model: Shapiro-Wilk test, two-way repeated measures general linear model, Pearson Chi-square Primary outcome: (descriptive with statistical values): Calories ↑, fat ↓, protein ↑, carbohydrates ↑, sugar ↑, fiber ↔, folate ↓, iron ↑, calcium ↑, magnesium ↑	Follow up period (3, 6, 12 months, etc): n/a
A video lesson series is effective in changing the dietary intakes and food-related behaviors of low-income homemakers	Cox RH, White AH, Gaylord CK. A video lesson series is effective in changing the dietary intakes and food-related behaviors of low-income homemakers. J Am Diet Assoc. 2003;103(11):1488-1493. doi:10.1016/S0002	Cox et al, 2003	The purpose of this study was to evaluate the effectiveness of 12 face to face vs video lessons to improve the diet and food behaviors of low-income homemakers.	Quasi-Experimental	1. Video or in person nutrition sessions: <ol style="list-style-type: none"> Food guide pyramid Food preparation and safety Meal planning and budgeting Healthful breakfasts and snacks 	Frequency: 1x/ week Duration: 12 weeks	N: 108 (66 traditional group, 42 video group) Age Range: 15-52 years Age (Mean ± SD): 28 ± 8 Gender/Sex: 100% Female Race/Ethnicity: 57% White; 43% African American Specific Population/SES: Low income, enrolled in EFNEP or SNAP Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Nonpregnant adult female, low income (150% of poverty or less), enrolled in EFNEP or SNAP and having a VCR and telephone in the home. Education: 47% had not graduated from high school Location: Virginia	Type of Intervention: nutrition education, food safety, food resource management - meal planning, healthy food preparation Delivery Method: In person (individual or group), remote Frequency: 1x/week Duration: 12 weeks Data Collection Method: 24-hour food recalls Attrition Rate (total N and remaining): 86.1% (93 of 108 completing) Theoretical Model: None mentioned	Research Setting: Home or community organization Program Delivered By: Indigenous paraprofessionals (Program Assistants PAs) Partners: EFNEP and FSNEP Partnership Role: Recruitment	Statistical Model: Two-tailed t tests, Chi-squared test, t test Primary outcome: (descriptive with statistical values): Traditional Group: PSBC ↑, Fruits ↑, Vegetables ↑, Dairy/ Milk ↑, Fats/Sweets ↓, Iron ↓, Calcium ↑, Vitamin A ↑, Vitamin C ↑, Fat % kcal ↓, Fiber % DRI ↑ Video Group: PSBC ↑, Fruits ↑, Vegetables ↑, Dairy/Milk ↑, Fats/ Sweets ↓, Iron ↓, Calcium ↑, Vitamin A ↑, Vitamin C ↑, Fat % kcal ↓, Fiber % DRI ↑* Secondary outcomes measured (descriptive with statistical values): n/a	Follow up period (3, 6, 12 months, etc): n/a

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
About Eating: An Online Program With Evidence of Increased Food Resource Management Skills for Low-Income Women	Lohse B, Belue R, Smith S, Wamboldt P, Cunningham-Sabo L. About Eating: an online program with evidence of increased food resource management skills for low-income women. <i>J Nutr Educ Behav.</i> 2015;47(3):265-272. doi:10.1016/j.jneb.2015.01.006	Lohse et al, 2015	Project purpose was to produce and evaluate an online curriculum for low-income women that was aligned with eSatter tenets and congruent with best practices for nutrition education for low-income audiences with the potential to be evidence-based and sustainable.	Randomized Control Trial	1. Online, self-directed activities tailored to participant responses: a. Enjoying eating b. About being active c. About my size d. Your food variety e. Time to eat f. Hunger and Fullness	Frequency: n/a Duration: 30 days	N: Intervention: 288; Control: 244 Age Range: 18 - 45 years old Age (Mean ± SD): Intervention: 30.7± 7.8; Control: 30.7± 7.1 Gender/Sex: Intervention: 100% Female; Control: 100% Female Race/Ethnicity: Intervention: 93% non-Hispanic white; 6% Black; Control: 93% non-Hispanic white; 5% Black Specific Population/SES: low-income, food insecure women Participation Rate: Not provided Inclusion/Exclusion criteria (% excluded): Inclusion included female, aged 18–45 years, English literate, e-mail address and online access. Exclusion included history of heart, cancer, liver, or lung disease; employment in or study related to a nutrition profession; enrollment in 4-year college; residence in a county receiving SNAP education. Education: not provided Location: geographically disparate settings	Type of Intervention: online food resource management modules Delivery Method: online Frequency: n/a Duration: 30 days Data Collection Method: survey/questionnaire, interview Attrition Rate (total N and remaining): n/a Theoretical Model: ecSatter module	Research Setting: online and remote Program Delivered By: online modules Partners: WebHealth, USDA click n go, ecSatter Partnership Role: online non-dieting 10 module program based in ecSatter, used to modify for About Eating intervention	Primary outcome: (descriptive with statistical values): ** food resource management skills (eg, using a budget and planning meals to include all food groups) Statistical Model: chi square, t-test, anova, paired t-test.	Follow up period: n/a
Adaptation of a culturally relevant nutrition and physical activity program for low-income, Mexican-origin parents with young children	Kaiser L, Martinez J, Horowitz M, et al. Adaptation of a culturally relevant nutrition and physical activity program for low-income, Mexican-origin parents with young children. <i>Prev Chronic Dis.</i> 2015;12:E72. doi:10.5888/pcd12.140591	Kaiser et al, 2015	A 5-year research study using a culturally relevant obesity prevention program that targets rural Mexican-origin farmworker families with children aged 2 to 8 years in California's Central Valley.	Cluster, randomized control trial	1. \$25 monthly incentive for fruits and vegetables 2. Student nutrition education and physical activity program in school 3. Parent nutrition education and physical activity program	Frequency: 1x/month Duration: 10 months	N: 238 Age Range: not provided Age (Mean ± SD): not provided Gender/Sex: not provided Race/Ethnicity: 100% Hispanic Specific Population/SES: Low income, Mexican origin families with children ages 2-8 Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Mexican-origin families with young children, residing in 2 rural communities of California's Central Valley Education: not provided Location: California's Central Valley	Type of Intervention: nutrition education and physical activity Delivery Method: in person, group Frequency: 1x/month Duration: 10 months Data Collection Method: Focus groups Attrition Rate (total N and remaining): 53% (125 of 238 families) Theoretical Model: Social Cognitive Theory/Social Learning Theory	Research Setting: Schools Program Delivered By: local educator with a background in family counseling Partners: University of California, Davis (UC Davis), University of California Cooperative Extension (UCCE) Partnership Role: Nutrition education curriculum	Statistical Model: n/a Primary outcome: (descriptive with statistical values): physical activity ↑, unhealthy foods ↓, FV consumption ↑	Follow up period (3, 6, 12 months, etc): 1 and 2 years
An Outcome Evaluation of Food Pantries Implementing the More than Food Framework	Sanderson J, Martin KS, Colantonio AG, Wu R. An Outcome Evaluation of Food Pantries Implementing the More than Food Framework. <i>J Hunger Environ Nutr.</i> 2020;15(4):443-455. doi:10.1080/19320248.2020.1748782	Sanderson et al, 2020	Evaluation of the More than Food framework which uses individualized coaching to address the root causes of hunger.	One group: Pre/Post	1. Client choice at food pantry 2. Connecting clients to community resources 3. Cultural approach	Frequency: not specified Duration: 9 months	N: 484 (Texas 211, Rhode Island 102, Connecticut 171) Age Range: 18 - 55 Age (Mean ± SD): 39.6 ± 12.1 Gender/Sex: (n=471) 9.3% Male, 90.7% Female Race/Ethnicity: Hispanic/Latino: 54.4%; Black/African American/West Indian: 26.9%; White: 14.9%; Asian/Pacific Islander: 1.2%; Other: 2.5% Specific Population/SES: Food pantry recipients Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): Food pantry client, ages 18-55, clients interested in making positive changes in their lives. Education: (n=439) 36% <high school degree; 64% High school/GED or greater Location: Texas, Rhode Island, Connecticut	Type of Intervention: nutrition education, FV consumption, making healthy food selection, food resource management Delivery Method: in person, 1x1 Frequency: not specified Duration: 9 months Data Collection Method: questionnaires, interviews Attrition Rate (total N and remaining): n/a Theoretical Model: Stages of Change	Research Setting: Food pantries Program Delivered By: Trained coaches Partners: Freshplace program from Hartford CT Partnership Role: Basis for More than Food intervention	Statistical Model: McNemar's test, paired t-test Primary outcome: (descriptive with statistical values): Food insecurity ↓*, FV consumption ↑*, self sufficiency ↑*	Follow up period (3, 6, 12 months, etc): 4 and 9 months
BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families	Olvera N, Bush JA, Sharma SV, Knox BB, Scherer RL, Butte NF. BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families. <i>Obesity (Silver Spring).</i> 2010;18 Suppl 1:S102-104. doi:10.1038/oby.2009.439	Olvera et al, 2010	A 12 week family-based exercise, nutrition education and counseling intervention to increase physical fitness and activity in low-income Latino mothers and daughters	Quasi-experimental	1. Physical activity 2. Nutrition education 3. Counseling	Frequency: weekly Duration: 12 week	N: 92 Age Range: not provided Age (Mean ± SD): Experimental group mothers 33.3 ± 4.6 years and daughters 9.9 ± 1.1 years; control group mothers 38.2 ± 10.6 years and daughters 10.4 ± 1.1 years Gender/Sex: 100% female Race/Ethnicity: 100% Latina Specific Population/SES: Low income; Latina mothers and daughters Participation Rate: 76% Inclusion/Exclusion criteria (% excluded): Latino mothers and their daughters (ages 7–13 years) who had no medical conditions or dietary restrictions Education: 68% of mothers had <8 years of education Location: Texas	Type of Intervention: nutrition education, physical education Delivery Method: Group, in person Frequency: weekly Duration: 12 week Data Collection Method: physical activity tests, survey/questionnaires Attrition Rate (total N and remaining): n/a Theoretical Model: Social Cognitive Theory	Research Setting: Community organizations Program Delivered By: trained instructors Partners: Schools, University of Houston Grants to Enhance and Advance Research Partnership Role: recruitment, facilities, funding	Statistical Model: two sided t test, Cohen's d Primary outcome: (descriptive with statistical values): Daughter physical fitness ↑, high fat foods ↓, sweetened beverages ↓, FV consumption ↑, mother physical fitness ↑	Follow up period (3, 6, 12 months, etc): n/a

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Changing the conversation about hunger: the process of developing Freshplace	Martin K, Shuckewer M, O'Rourke C, Schmitz A. Changing the conversation about hunger: the process of developing Freshplace. Prog Community Health Partnersh. 2012;6(4):429-434. doi:10.1353/cpr.2012.0056	Martin et al, 2012	Freshplace is an innovative food pantry collaborative with the goal of building long-term food security and self sufficiency among food pantry recipients	Randomized Control Trial	1. Client choice pantry with fresh foods 2. Case management 3. Services and referrals	Frequency: 2x/ month Duration: 18 months	N: 226 Age Range: not provided Age (Mean ± SD): 51 (no SD provided) Gender/Sex: Intervention: 61% Female, 39% Male; Comparison: 58% Female, 42% Male Race/Ethnicity: Intervention: 72% Black, 19% West Indian, 9% Other; Comparison: 74% Black, 18% West Indian, 8% Other Specific Population/SES: Food pantry recipient Participation Rate: 87% Inclusion/Exclusion criteria (% excluded): Study participants must be 18 years or older and live within the three zip codes representing the North End of Hartford. Education: not provided Location: Connecticut	Type of Intervention: nutrition education, food resource management, addressing root causes of food insecurity Delivery Method: in person, 1x1, group Frequency: 2x/month Duration: 18 months Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): Theoretical Model: Stages of Change	Research Setting: Food banks Program Delivered By: project case manager Partners: 3 community organizations: FoodShare the Chrysalis Center Inc, Junior League of Hartford Inc. University of Connecticut Partnership Role: 3 community organizations founded the innovative food pantry program-freshplace and created a steering committee that developed the Freshplace program University of Connecticut designed and evaluated the program	Statistical Model: Spearman correlations and chi-square tests Primary outcome: (descriptive with statistical values): Food security ↑*, self sufficiency ↑, fruit vegetable and fiber scores ↑*	Follow up period (3, 6, 12 months, etc): quarterly follow up measurements for 18 months
Comparison of a web-based vs in-person nutrition education program for low-income adults	Neuenschwander LM, Abbott A, Mobley AR. Comparison of a web-based vs in-person nutrition education program for low-income adults. J Acad Nutr Diet. 2013;113(1):120-126. doi:10.1016/j.jand.2012.07.034	Neuenschwander et al, 2013	Evaluated if web-based nutrition education could rest in equivalent nutrition-related behaviors when compared with traditional in-person nutrition education in low-income adults.	Randomized Control Trial	1. 3 nutrition education (from SNAP-ED curriculum) a. Fruits and vegetables as snacks and side dishes b. Nutrition Facts label reading skills c. Whole grains as breakfast foods 2. Delivery method a. In person (control group) b. Web-based	N: 137 Age Range: 48% (18-30), 39.8% (31-50), 10.6% (51-70), 1.6% (71+) Age (Mean ± SD): not provided Gender/Sex: 9.8% Male, 90.2% Female Race/Ethnicity: 4.2% Hispanic, 95.8% Non-Hispanic; 6.5% Black, 91.1% White, 2.4% Other Specific Population/SES: Low income adults, SNAP-Ed Eligible Participation Rate: 90% Inclusion/Exclusion criteria (% excluded): SNAP-Ed eligible, 18 years or older, able to read and speak English and regular Internet access. Education: 11.4% less than high school, 31.7% high school/GED, 37.4% some college, 7.3% associate's degree, 12.2% bachelor's degree or more Location: Indiana	Type of Intervention: nutrition education Delivery Method: online Frequency: 3 lessons Duration: self-paced Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Experiential Learning Theory, Kolb's learning styles	Research Setting: Food pantries, remote (online) Program Delivered By: interactive web-based curriculum; paraprofessionals, Family Nutrition Program Assistants Partners: SNAP-ED Partnership Role: Recruitment	Statistical Model: Fisher's exact test, paired t test Primary outcome: (descriptive with statistical values): fruit and vegetable consumption ↑*, food resource management ↑*, food safety ↑*, physical activity ↑*	Follow up period (3, 6, 12 months, etc): 1 month	
Cooking Matters for Adults Improves Food Resource Management Skills and Self-confidence Among Low-Income Participants	Pooler JA, Morgan RE, Wong K, Wilkin MK, Blitstein JL. Cooking Matters for Adults Improves Food Resource Management Skills and Self-confidence Among Low-Income Participants. J Nutr Educ Behav. 2017;49(7):545-553.e1. doi:10.1016/j.jneb.2017.04.008	Pooler et al, 2017	Measure the impact of 6 weeks of Cooking Matters for Adults for low-income participants on food resource management skills and self confidence	Quasi-experimental	1. 6, 2-hour weekly lessons a. Cooking skills b. Take home groceries c. Recipes 2. Nutrition education i. Selecting and preparing fruits and vegetables ii. Making and shopping with a list iii. Using ingredients more than once iv. Nutrition facts label v. Price labels	Frequency: weekly Duration: 6 weeks	N: 668 Age Range: not provided Age (Mean ± SD): Intervention 50.6 ± 16.4; Comparison 43.8 ± 14.1 Gender/Sex: Intervention 90.1% Female, 9.9% Male; Comparison 79.8% Female, 20.2% Male Race/Ethnicity: Intervention 54.7% Non-Hispanic White, 18.3% Non-Hispanic Black, 18.7% Hispanic, 8.3% Other; Comparison 52.9% Non-Hispanic White, 14.4% Non-Hispanic Black, 27.3% Hispanic, 5.4% Other Specific Population/SES: Low income Participation Rate: 78.7% Inclusion/Exclusion criteria (% excluded): Adults participating in English or Spanish Cooking Matters classes, >18 years old, primary cook or food shopper of the household, able to read and write in English or Spanish. Exclusion: classes specific for those with disabilities or those taught in a language other than Spanish or English. Education: Intervention 9.6% Less than high school, 29.7% high school or GED, 27.6% some college, 11.2% 2 year degree, 22% 4 year degree; Comparison 9.5% Less than high school, 32.9% high school or GED, 28.1% some college, 13.7% 2 year degree, 15.9% 4 year degree Location: CA, CO, ME, MA, MI, and OR	Type of Intervention: nutrition education, meal preparation, making healthy food selection Delivery Method: in person, group Frequency: weekly Duration: 6 weeks Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Social Cognitive Theory/Social Learning Theory	Research Setting: Community Organization Program Delivered By: trained community nutrition educators Partners: Share our Strength Partnership Role: Funded the study	Statistical Model: Pearson's chi-square test and t tests Primary outcome: (descriptive with statistical values): Food resource management ↑*, Worrying that food might run out at 3 months ↓*, Worrying that food might run out at 6 months ↓	Follow up period (3, 6, 12 months, etc): 3 and 6 months

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
Digital photo receivers are a viable technology for nutrition education of low-income persons	Rifkin R, Lohse B, Bagdonis J, Stotts J. Digital photo receivers are a viable technology for nutrition education of low-income persons. <i>J Nutr Educ Behav.</i> 2006;38(5):326-328. doi:10.1016/j.jneb.2006.04.145	Rifkin et al, 2006	The purpose of this Great Education Materials is to describe the use of Digital Photo Receivers (DPR) for nutrition education of low-income audiences in an urban setting and to examine DPR effectiveness and future viability.	One Group: Post Only	1. 3 nutrition education lessons a. Importance of breakfast b. Eating more fresh fruits and vegetables to increase folic acid intake c. County-specific food and nutrition resources	Frequency: one-time Duration: n/a	N: 93 Age Range: 20-89 years old Age (Mean ± SD): n/a Gender/Sex: 30.1% Male, 69.9% Female Race/Ethnicity: 18.3% White, 61.3% Black, 4.3% American Indian, 6.5% Hispanic, 3.2% Asian, 4.3% Other Specific Population/SES: low-income, food-insecure children Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): n/a Education: n/a Location: Philadelphia, PA	Type of Intervention: nutrition education Delivery Method: in-person, online, digital photo receiver Frequency: one-time Duration: n/a Data Collection Method: survey/questionnaire, focus group Attrition Rate (total N and remaining): n/a Theoretical Model: n/a	Research Setting: Food pantries, county assistance office, senior centers, employment center, WIC clinic Program Delivered By: digital photo receiver Partners: Family Nutrition Program, Kansas State University Partnership Role: program developers	Primary outcome: (descriptive with statistical values): ↑ perceptions and attitudes toward DPR Statistical Model: n/a	Follow up period: n/a
Effectiveness of a nutrition intervention with rural low-income women	Tessaro I, Rye S, Parker L, Mangone C, McCrone S. Effectiveness of a nutrition intervention with rural low-income women. <i>Am J Health Behav.</i> 2007;31(1):35-43. doi:10.5555/ajhb.2007.31.1.35	Tessaro et al, 2007	Study for women using a computer-based interactive, nutrition intervention in the Appalachian region with the aim to reduce cardiovascular disease risk by promoting an increase in fruit/vegetable consumption and a decrease in dietary fat consumption.	Randomized Control Trial	1. Interactive computer based nutrition education a. Increase fruits and vegetables b. Decrease dietary fat c. Serving size d. Nutrition labels e. Meal preparation	Frequency: one-time Duration: average: 10 minutes	N: 395 (Intervention N: 200, Control N: 195) Age Range: 40-65 years old Age (Mean ± SD): Intervention: 49.95; Control: 50.56 Gender/Sex: 100% Female Race/Ethnicity: Not specified Specific Population/SES: low-income women Participation Rate: 50% Inclusion/Exclusion criteria (% excluded): Women aged 45-60 years old living in Appalachian region Education: 24% less than high school/GED; 43% high school graduate; 33% more than high school Location: northern and southern regions of West Virginia	Type of Intervention: nutrition education Delivery Method: in-person, online, mobile device Frequency: one-time Duration: average: 10 minutes Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Stages of Change (Transtheoretical model)	Research Setting: health services organization (rural clinics) Program Delivered By: computer-based interactive modules, health professionals Partners: health services organization Partnership Role: site of intervention	Primary outcome: (descriptive with statistical values): ↑ readiness to change, ↑* food knowledge (knowledge about dietary fat), and ↔ fruit and vegetable consumption, ↓* barrier to eating foods low in fat Statistical Model: t-test, fisher's exact test, chi square	Follow up period: 3 month follow-up
Effects of a nutrition education program for urban, low-income, older adults: a collaborative program among nurses and nursing students	Klinedinst NJ. Effects of a nutrition education program for urban, low-income, older adults: a collaborative program among nurses and nursing students. <i>J Community Health Nurs.</i> 2005;22(2):93-104. doi:10.1207/s15327655jchn2202_3	Klinedinst et al, 2005	The Eat and Learn Nutrition Program is a series of 3 discussions on nutrition topics, based on a community needs assessment, to increase knowledge of nutrition and promote healthy eating among the residents of an older adult, low-income, urban housing community.	One group: Pre/Post	1. 3 nutrition education lessons a. Hidden Salt b. Reducing Dietary Intake of Fat and Cholesterol c. Diabetes and Reducing Dietary Sugar Intake	Frequency: 1x/week Duration: 3 weeks	N: 25 Age Range: 60 - 92 Age (Mean ± SD): 75 ± 1.08 Gender/Sex: 84% Female, 16% Male Race/Ethnicity: 48% African American, 40% White, 12% Hispanic Specific Population/SES: Low Income, disabled, or older adults Participation Rate: 12.5% Inclusion/Exclusion criteria (% excluded): Residing in an urban high-rise apartment building designated for low-income, disabled, or older adults. Education: not provided Location: Philadelphia	Type of Intervention: Nutrition education Delivery Method: In person, group Frequency: 1x/week Duration: 3 weeks Data Collection Method: Survey/questionnaire, pre/post test Attrition Rate (total N and remaining): n/a Theoretical Model: Health Belief Model	Research Setting: Public housing Program Delivered By: Graduate nursing student Partners: American Heart Association, American Diabetes Association, AND Partnership Role: Curriculum development	Statistical Model: Qualitative analysis from survey results Primary outcome: (descriptive with statistical values): hidden salt knowledge ↑, reducing fat and cholesterol knowledge ↑, diabetes knowledge ↑	Follow up period (3, 6, 12 months, etc): n/a
Evaluating a food bank recipe-tasting program	Keller-Olaman SJ, Edwards V, Elliott SJ. Evaluating a food bank recipe-tasting program. <i>Can J Diet Pract Res.</i> 2005;66(3):183-186. doi:10.3148/66.3.2005.183	Keller-Olaman et al, 2005	Evaluate a combined heart-healthy recipe-tasting and education program that aimed to promote healthy eating knowledge and skills in a group of food bank recipients	One Group: Post Only	1. Heart healthy recipe tasting 2. Nutrition education	Frequency: 1x/month Duration: 4 months	N: 55 Age Range: <25 - 65 Age (Mean ± SD): 11% <25, 24% 25-34, 38% 35-44, 16% 45-54, 9% 55-65 Gender/Sex: 58% Female, 42% Male Race/Ethnicity: not provided Specific Population/SES: Food Pantry Recipients Participation Rate: 35% Inclusion/Exclusion criteria (% excluded): anyone attending the food bank on the day of the tasting Education: not provided Location: Hamilton, Ontario	Type of Intervention: Nutrition education, food tasting Delivery Method: In person, group Frequency: 1x/month Duration: 4 months Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: None mentioned	Research Setting: Food banks Program Delivered By: Community food advisors Partners: n/a Partnership Role: n/a	Statistical Model: Qualitative analysis from survey results Primary outcome: (descriptive with statistical values) Selection of healthier foods ↑, nutrition knowledge ↑, program satisfaction ↑	Follow up period (3, 6, 12 months, etc): n/a
Extending the Reach of Nutrition Education for Older Adults: Feasibility of a Train-the-Trainer Approach in Congregate Nutrition Sites	McClelland JW, Irving LM, Mitchell RE, Bearon LB, Webber KH. Extending the reach of nutrition education for older adults: feasibility of a Train-the-Trainer approach in congregate nutrition sites. <i>J Nutr Educ Behav.</i> 2002;34 Suppl 1:S48-52. doi:10.1016/s1499-4046(06)60311-4	McClelland et al, 2002	This study examines the feasibility of a Train-the-Trainer approach using congregate nutrition site (CNS) managers to deliver nutrition education, as part of Partners in Wellness (PIW) nutrition curriculum.	One group: Pre/Post	1. Nutrition education sessions	Frequency: 1x/week Duration: 8 weeks	N: 25 Age Range: 60 - 92 Age (Mean ± SD): 75 ± 1.08 Gender/Sex: 84% Female, 16% Male Race/Ethnicity: 48% African American, 40% White, 12% Hispanic Specific Population/SES: Low Income, disabled, or older adults Participation Rate: 12.5% Inclusion/Exclusion criteria (% excluded): Residing in an urban high-rise apartment building designated for low-income, disabled, or older adults. Education: not provided Location: Philadelphia	Type of Intervention: nutrition education via train the trainers Delivery Method: in-person, didactic education classes (lecture) Frequency: 1x/week Duration: 8 weeks Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): 71% Theoretical Model: N/A	Research Setting: congregate nutrition sites Program Delivered By: congregate nutrition site managers Partners: Partners in Wellness (PIW), North Carolina State University Partnership Role: programming and funding support	Primary outcome: (descriptive with statistical values): ↔ manager satisfaction, ↔ participant satisfaction, ↔ DETERMINE Nutritional Health checklist Secondary outcomes measured (descriptive with statistical values): fidelity in delivery Statistical Model: t-test	Follow up period: post survey 12 weeks after program conclusion

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Farm2Fork: Use of the Health Belief Model to Increase Fresh Fruit and Vegetable Intake Among Food Pantry Participants	Wright L, Arce KS, Himmelgreen D, Epps JB. Farm2Fork: Use of the Health Belief Model to Increase Fresh Fruit and Vegetable Intake Among Food Pantry Participants. Journal of Hunger & Environmental Nutrition. 2019;14(1-2):252-261. doi:10.1080/19320248.2018.1538920	Wright et al, 2019	Evaluation of Farm2Fork and the Health Belief Model (HBM) that was used to increase fruit and vegetable consumption by food pantry participants. The program included weekly produce distribution in conjunction with nutrition education.	One group: Pre/ Post	1. Weekly produce distribution 2. Nutrition education a. Healthy eating on a budget class b. Handouts with produce distribution 3. Cooking demonstration	Frequency: weekly sessions Duration: 4 months	N: 77 Age Range: 60+: 50.6%; 50-59: 24.7%; 40-49: 6.5%; 30-39: 10.4%; 18-29: 7.8% Age (Mean ± SD): N/A Gender/Sex: 66.2% Female; 33.8% Male Race/Ethnicity: 49.4% non-Hispanic White; 35.1% non-Hispanic Black; 10.4% Hispanic Whites; 2.6% Asian; 2.6% Native American Specific Population/SES: low-income individuals 18 and above Participation Rate: 15.1% Inclusion/Exclusion criteria (% excluded): Participants 18 yrs or older in the Farm2Fork program- a food pantry program giving fresh produce monthly- in Tampa, Florida Education: N/A Location: Tampa, FL	Type of Intervention: weekly distributions of fresh produce at the food pantry Delivery Method: in person education class with produce distributions Frequency: weekly sessions Duration: 4 months Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Health Belief Model	Research Setting: Food Pantries Program Delivered By: Trained food bank/pantry personnel Partners: Northern Illinois University, food pantries in northern Illinois region Partnership Role: development of program curriculum	Statistical Model: pre post test t tests Bonferroni correction Cohen's d Hotelling's Trace Chi Square analyses Primary outcome: (descriptive with statistical values): increased food security ↑ increased reported importance/ use of FFV ↑	Follow up period (3, 6, 12 months, etc): 4 months post program
Food Pantries Integrating Eating Competence, Interest/Enjoyment in Physical Activity and Self-Efficacy for Pantry Participants	Umoren J, Brasseur K, Yao P, et al. Food Pantries Integrating Eating Competence, Interest/Enjoyment in Physical Activity and Self-Efficacy for Pantry Participants. J Nutr Educ Behav. 2020;52(2):195-198. doi:10.1016/j.jneb.2019.10.003	Umoren et al, 2020	Assessed the whole body approach (WBA) as a health promotion non-diet program for adults who are low income and food pantry recipients to address nutrition-related health issues.	One group: Pre/ Post	1. Nutrition education and physical activity sessions a. Welcome b. Developing a healthy relationship with food c. Enjoyable movement d. Practicing mindfulness e. Problem solving f. Every body is a good body g. Talk back to negative thoughts h. You can manage stress i. Make social cues work for you and cooking demo with Chef Jen j. Ways to stay motivated	Frequency: 1x/week, 90 minutes Duration: 10 weeks	N: 73 Age Range: 27 - 89 years old Age (Mean ± SD): N/A Gender/Sex: 93% Female, 7% Male Race/Ethnicity: N/A Specific Population/SES: low income, food pantry recipients Participation Rate: 15.1% Inclusion/Exclusion criteria (% excluded): Pantry participants at North Illinois Food Bank. Education: N/A Location: northern Illinois	Type of Intervention: whole body approach nutrition and physical activity education Delivery Method: in person education sessions + fresh produce and recipes Frequency: 1x/week, 90 minutes Duration: 10 weeks Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Social Cognitive Theory, Satter Eating Competence Model	Research Setting: food pantries Program Delivered By: certified diabetes educators, registered dietitians, nutrition and dietetic research assistants Partners: Northern Illinois University, food pantries in northern Illinois region Partnership Role: development of program curriculum, site for program	Primary outcome: (descriptive with statistical values): ↑* eating competence, ↑ eating attitudes, ↑ food acceptance, ↑* contextual skills, ↑* self-efficacy, ↑* interest/enjoyment in physical activity (after Bonferroni correction) Statistical Model: t-test with bonferroni adjustment to minimize type 1 error	Follow up period: survey at end of program (10 weeks)
Food Pantry Nutrition Education about Whole Grains and Self-Efficacy	Yao P, Ozier A, Brasseur K, Robins S, Adams C, Bachar D. Food Pantry Nutrition Education about Whole Grains and Self-Efficacy. Family and Consumer Sciences Research Journal. 2013;41(4):426-437. doi:10.1111/fcsr.12028	Yao et al, 2013	The intervention focused on the perception of eating more whole-grain foods and on self-efficacy in choosing and preparing foods that include whole grains, using a quasi-experimental 4-week study.	Quasi-experimental	1. Recipe tasting 2. Take home recipe ingredients 3. Nutrition education a. Whole grains	Frequency: one time Duration: 4 weeks 6 supplemental units for specific populations	N: 409 (food pantry intervention: 205, food pantry control: 204) Age Range: 18-91 years old Age (Mean ± SD): 41 in the intervention; 45 in the control Gender/Sex: Control: 98% female, 2% male; Treatment: 98% female, 2% male Race/Ethnicity: N/A Specific Population/SES: low income Participation Rate: N/A Inclusion/Exclusion criteria (% excluded): Participants should be 18 years or older and be responsible for the preparation of family meals. Education: N/A Location: Ursa, IL	Type of Intervention: Evaluation of nutrition education program Delivery Method: In person w/ suggested at home activity Frequency: one time Duration: 4 weeks 6 supplemental units for specific populations Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Social Cognitive Theory	Research Setting: Community Organization Program Delivered By: Bilingual trained pantry staff Partners: Northern Illinois Food Bank Northern Illinois University Partnership Role: IFB- food bank providing foods to the partner agency, community cupboard NIU- Research/evaluators of the program	Statistical Model: Cronbach's alpha coefficient Variance Inflation Factor Logistic Regression Multiple Linear Regression Primary outcome: (descriptive with statistical values): increased whole-grain food consumption ↑ self efficacy of preparing whole grain foods ↓ preparing whole grain foods ↓	Follow up period (3, 6, 12 months, etc): Completed verbal interviews before the intervention and 1 week and 1 month after the intervention
From Garden to Recipient: A Direct Approach to Nutrition Education	Murphy B. From Garden to Recipient: A Direct Approach to Nutrition Education. Journal of Extension. 2013;51(5).	Murphy, 2013	Impact assessment of the Maine Harvest for Hunger program to provide vegetables and nutrition education directly to people with limited access to fresh produce.	One Group: Post Only	1. Fresh produce distributions 2. Cooking demonstrations 3. Recipe tasting 4. Nutrition education handouts	Frequency: 1x/week Duration: 10 weeks	N: 61 Age Range: > 65 years old Age (Mean ± SD): N/A Gender/Sex: N/A Race/Ethnicity: Intervention: N/A Specific Population/SES: food pantry recipients, food insecure Participation Rate: 80% Inclusion/Exclusion criteria (% excluded): Attended at least 1 of the Maine Harvest for Hunger produce distributions during 10 week season in 2011. Education: N/A Location: southwestern Maine	Type of Intervention: fresh produce + cooking demonstrations + nutrition education fact sheets Delivery Method: in person Frequency: 1x/week Duration: 10 weeks Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: N/A	Research Setting: food pantries Program Delivered By: Master Gardeners, food pantry staff Partners: gardeners and farmers, University of Maine Cooperative Extension's Maine Harvest for Hunger (MHH) Partnership Role: grow food for distribution, site of food distribution	Primary outcome: (descriptive with statistical values): ↑ degree of self-described improvement in diet quality, ↑ nutrition knowledge, ↑ behavior changes Statistical Model: descriptive statistics (percentages)	Follow up period: survey sent 9 months after program

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
Healthy Choices for Every Body adult curriculum improves participants' food resource management skills and food safety practices.	Adedokun OA, Plonski P, Jenkins-Howard B, Cotterill DB, Vail A. Healthy Choices for Every Body Adult Curriculum Improves Participants' Food Resource Management Skills and Food Safety Practices. J Nutr Educ Behav. 2018;50(6):638-644. doi:10.1016/j.jneb.2018.02.005	Adedokun et al, 2018	Evaluation of the impact of the University of Kentucky's Healthy Choices for Every Body (HCEB) adult nutrition education curriculum on participants' food resource management (FRM) skills and food safety practices.	Quasi-experimental	1. Nutrition education lessons a. Nutrition facts label b. Plan nutrition meals c. Money saving strategies d. Food safety e. MyPlate f. Limiting fat, sugar and sodium g. Healthy breakfast h. Physical activity i. Special populations: Pregnant women, nursing women and infants	Frequency: weekly lesson; 45-60min per lesson Duration: 10 core units, 7 of which were required for graduation 6 supplemental units for specific populations	N: 526 (Intervention: 413; Comparison: 113) Age Range: 18-65; Intervention: 15% 18-29, 16% 30-39, 12% 40-49, 26% 50-64, 27% 65, 5% missing; Comparison: 15% 18-29, 11% 30-39, 12% 40-49 12%, 50-64 61%, >=65 0%, missing: 1% Age (Mean ± SD): N/A Gender/Sex: Intervention: 88% Female; 12% Male ; Comparison: 90% Female; 10% Male Race/Ethnicity: Intervention: 82% White; 17% Other; 1% Missing; Comparison: 91% White; 8% Other; 1% Missing Specific Population/SES: low income, EFNEP/ SNAP eligible Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): Participants in both groups were required to be at least 18 years old, could be male or female, and of any racial or ethnic background. Education: Intervention: did not complete high school- 22%, completed high school/ GED- 42%, some college- 16%, graduated 2yr college- 5%, graduated 4yr college- 4%, postgraduate- 2%, missing- 9% ; Intervention did not complete high school-13%, completed high school/GED- 48%, some college- 20%, graduated 2yr college- 6%, graduated 4yr college- 5%, postgraduate-6%, missing- 1% Location: Kentucky	Type of Intervention: Evaluation of nutrition education program Delivery Method: small group settings Frequency: weekly lesson; 45-60min per lesson Duration: 10 core units, 7 of which were required for graduation 6 supplemental units for specific populations Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Model: Knowles Adult Learning Theory	Research Setting: Community Organization Program Delivered By: Bilingual paraprofessional nutrition education assistants Partners: N/A Partnership Role: N/A	Statistical Model: Chi Square Test of Independence ANCOVA Independent Sample T-tests Primary outcome: (descriptive with statistical values): food resource management skills↑ food safety practices ↑ frequency of handwashing ↑	Follow up period (3, 6, 12 months, etc): N/A
Highlighting healthy options in a food pantry setting a pilot study	Grabow KN, Schumacher J, Banning J, Barnes JL. Highlighting Healthy Options in a Food Pantry Setting: A Pilot Study. Family and Consumer Sciences Research Journal. 2020;48(3):263-275. doi:10.1111/fcsr.12348	Grabow et al, 2020	Study evaluating the effects of rearranging a food pantry on consumer food choices by using two pantries in Illinois. One which acted as a control and the other pantry rearranged to highlight healthier foods	Quasi-experimental	1. Healthy food nudges at food pantry a. Fresh produce b. Healthy choices shelf i. Low saturated fat ii. Low sodium iii. Low added sugar iv. High fiber	Frequency: Daily, with certain shopping hours available Duration: 1 month	N: 72 (38 control group; 34 intervention group) Age Range: Control: 53% 18-40, 47% 41+; Intervention: 21% 18-40, 79% 41+ Age (Mean ± SD): not provided Gender/Sex: Control: 16% Male, 28% Female, 10% No Response; Intervention: 26% Male, 59% Female, 15% No Response Race/Ethnicity: Control: 11% African American, 68% White, 21% Other; Intervention: 18% African American, 71% White, 12% Other Specific Population/SES: food pantry recipients, low-income Participation Rate: N/A Inclusion/Exclusion criteria (% excluded): Food pantry patrons were eligible to participate in the study if they visited the food pantry on data collection days and were at least 18 years of age, and willing to participate Education: N/A Location: Bloomington-Normal, Illinois	Type of Intervention: nutrition education Delivery Method: 'nudges'- set up food pantry to showcase healthy options Frequency: Daily, with certain shopping hours available Duration: 1 month Data Collection Method: N/A Attrition Rate (total N and remaining): N/A Theoretical Methods: N/A	Research Setting: Food Pantries Program Delivered By: Nudges/Signs/Materials Partners: Illinois State University Partnership Role: Conducted the study based on request of intervention food pantry	Primary outcome: (descriptive with statistical values): Selection: ↑ grains, fresh fruit, fresh vegetables, canned fruit, canned vegetables; Increase in selection of healthier options when those are put at the front Statistical Model: Chi Square Independent t tests	Follow up period: N/A
Incorporating Nutrition Education Classes into Food Pantry Settings: Lessons Learned in Design and Implementation.	Hardison-Moody A, Bowen S, Bloom JD, Sheldon M, Jones L, Leach B. Incorporating Nutrition Education Classes into Food Pantry Settings: Lessons Learned in Design and Implementation. Journal of Extension. 2015;53(6).	Hardison-Moody et al, 2015	The EFNEP-based study used strategies such as partnering with food pantry directors, offering classes during times that are convenient for clients, and incorporating fresh, local foods to improve outcomes and retention in nutrition education programs with low-income clients at food pantries.	One group: Pre/ Post	1. Nutrition education 2. Cooking demonstration 3. Recipes 4. Grocery store tour	Frequency: 1 hour per week Duration: 6 weeks	N: 22 Age Range: N/A Age (Mean ± SD): N/A Gender/Sex: N/A Race/Ethnicity: 45% White, 41% Black/African American, 5% Multiple races Specific Population/SES: food pantry recipients, low-income Completion Rate: 50% (half of participants dropped out during course of the sessions) Inclusion/Exclusion criteria (% excluded): N/A Education: N/A Location: North Carolina	Type of Intervention: nutrition education with cooking demonstration + grocery store tours + cooking classes Delivery Method: in person, group Frequency: 1 hour per week Duration: 6 weeks Data Collection Method: survey/questionnaire, 24-hr recall Attrition Rate (total N and remaining): n/a Theoretical Method: n/a	Research Setting: food pantries Program Delivered By: EFNEP program associates Partners: EFNEP; Voices Into Action: The Families, Food and Health Project Partnership Role: programming and funding support	Primary outcome: (descriptive with statistical values): ↑ dietary behavior change of fruit and vegetable consumption Statistical Model: descriptive statistics (percentages)	Follow up period: none

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Indigenous message tailoring increases consumption of fresh vegetables by clients of community pantries	Clarke P, Evans SH, Hovy EH. Indigenous message tailoring increases consumption of fresh vegetables by clients of community pantries. Health Commun. 2011;26(6):571-582. doi:10.1080/10410236.2011.558337	Clarke et al, 2011	Evaluated whether message tailoring of recipes and food-use tips for low-income households is superior to providing a generic version of the material.	Quasi-experimental	1. Recipes 2. Food use tips	Frequency: 1 time Duration: 10 regularly scheduled distribution days at each site, for 60 occasions overall;	N: 706 (Control- 236; Generic- 226; Tailored- 244) Age Range: N/A Age (Mean ± SD): Control: 2.13; Generic: 2.45; Tailored: 2.36 Gender/Sex: N/A Race/Ethnicity: N/A Specific Population/ SES: Food pantry clients, low-income Participation Rate: 69% Inclusion/Exclusion criteria (% excluded): Ineligible pantry recipients included homeless persons (lacking kitchens), those who spoke languages other than English or Spanish, those who were not their household's primary cook, people with emotional or cognitive deficits that impaired their ability to be interviewed, people who were deaf, people who did not have phones, and people who had previously participated. Education: N/A Location: California	Type of Intervention: Nutrition/ cooking education Delivery Method: In person, software message testing Frequency: One interaction Duration: 10 regularly scheduled distribution days at each site, for 60 occasions overall; Data Collection Method: survey/ questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Construal Level Theory, Self-determination Theory, Reactance Theory	Research Setting: food pantries Program Delivered By: 6 food pantries Partners: University of S California Partnership Role: researchers/evaluators	Statistical Model: Chi Square ANOVA t test multivariate regression Primary outcome: (descriptive with statistical values): ↑* vegetable use and consumption for clients receiving tailored messages compared to clients receiving control and generic messages (p<0.005)	Follow up period (3, 6, 12 months, etc): after 6 days and 6 weeks
Intention to change nutrition-related behaviors in adult participants of a Supplemental Nutrition Assistance Program-Education	Savoie MR, Mispireta M, Rankin LL, Neill K, LeBlanc H, Christofferson D. Intention to change nutrition-related behaviors in adult participants of a Supplemental Nutrition Assistance Program-Education. J Nutr Educ Behav. 2015;47(1):81-85. doi:10.1016/j.jneb.2014.08.009	Savoie et al, 2015	A study to measure SNAP-Ed outcomes of adult participants after selected nutrition lessons in 14 counties across the state of Utah	Retrospective; One Group - Post/Pre	1. Lessons a. Menu planning b. Shopping lessons c. MyPlate i. Fruits ii. Vegetables iii. Whole grains iv. Dairy v. Protein vi. Fat vii. Salt	Frequency: 1 time Duration: n/a	N: 203 Age Range: 18 years or older Age (Mean ± SD): N/A Gender/Sex: 78.6% Female, 21.4% Male Race/Ethnicity: 79.4% White, 0.1% Black/ African American, 1% Asian, 2.6% American Indian/Alaska Native, 8.9% Other, 8% Multiracial, 27.7% Hispanic Specific Population/ SES: SNAP Ed eligible, low-income Participation Rate: N/A Inclusion/Exclusion criteria (% excluded): Inclusion: 18 years or older, attended past SNAP-ed class, lived in Utah. Education: N/A Location: 14 counties in Utah	Type of Intervention: cooking and nutrition education + demonstrations and education materials Delivery Method: in person, group Frequency: 1 time Duration: n/a Data Collection Method: survey/ questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Theory of Planned Behavior	Research Setting: community setting Program Delivered By: certified paraprofessional nutrition education assistants Partners: SNAP-Ed., food pantries Partnership Role: programmatic support and materials	Primary outcome: (descriptive with statistical values): ↑* intention to change nutrition related behaviors Statistical Model: Wilcoxon signed rank test with bonferroni correction, paired t-test	Follow up period: none
It just really clicked: participant-perceived outcomes of community nutrition education programs	Devine C, Brunson R, Jastran M, Bisogni C. It just really clicked: participant-perceived outcomes of community nutrition education programs. J Nutr Educ Behav. 2006;38(1):42-49. doi:10.1016/j.jneb.2005.11.017	Devine et al, 2006	To understand participant-perceived outcomes of community nutrition education programs by low income adults.	Qualitative	1. Nutrition education	Frequency: n/a Duration: n/a	N: 18 Age Range: 19-55 Age (Mean ± SD): 33 (no SD) Gender/Sex: 6% Male, 94% Female Race/Ethnicity: 77.8% White, 16.7% African-American, 5.6% Arab Specific Population/SES: low income adults Participation Rate: 100% Inclusion/Exclusion criteria (% excluded): Education: 39% grade school or less, 28% high school, 28% beyond high school, 6% not provided Location: New York state (2 counties) and Pennsylvania (1 county)	Type of Intervention: nutrition education program (through EFNEP or FSNE) Delivery Method: in person, group Frequency: n/a Duration: n/a Data Collection Method: interviews Attrition Rate (total N and remaining): n/a Theoretical Methods: grounded theory approach	Research Setting: community setting Program Delivered By: paraprofessional nutrition educators or community volunteers Partners: EFNEP, FSNE, Cooperative State Research Education and Extension Service Partnership Role: program collaboration and funding	Primary outcome: (descriptive with statistical values): Positive outcomes to the program was related to enrollment motives and modified by whether participants' current worlds provided resources to put learning into practice.	Follow up period: none (completed interview within 12 months of completing program)
Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program	Taylor T, Serrano E, Anderson J, Kendall P. Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program. J Community Health. 2000;25(3):241-262. doi:10.1023/a:1005160216289	Taylor et al, 2000	A nutrition education program, entitled La Cocina Saludable, was designed according to the Stage of Change Model and implemented in ten southern Colorado counties with abuela educators.	One group: Pre/ Post	1. 5 nutrition education a. Make it healthy b. Make it fun c. Make a change d. Make it safe e. Make a plan 2. Resource guide 3. Food guide pyramid 4. Kitchen utensil incentives 5. Bilingual brochures 6. Food guide pyramid magnet 7. Bilingual flip chart	Frequency: abuela educators determine frequency and length of classes Duration: 5 units	N: 337 Age Range: 6% under 20, 40% 20-30 yo, 32% 31-40 yo, 15% 41-50 yo, 0% 51-60 yo, 8% over 60 yo Age (Mean ± SD): N/A Gender/Sex: 98% Female, 2% Male Race/Ethnicity: 98% Hispanic Specific Population/ SES: low-income, eligible for WIC, hispanic mothers Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): Inclusion: low-income Hispanic mothers of preschool children in southern Colorado. Education: 26% Elementary, 35% High School Diploma, 29% Some College Credit, 4% Bachelor's Degree or above, 7% other Location: 10 southern Colorado counties	Type of Intervention: peer educator-delivered bilingual nutrition education Delivery Method: in person, group Frequency: abuela educators determine frequency and length of classes Duration: 5 units Data Collection Method: survey/ questionnaire Attrition Rate (total N and remaining): 24% Theoretical Methods: Stage of Change Model	Research Setting: community setting Program Delivered By: trained abuela educators Partners: Extension agents, EFNEP, WIC Partnership Role: trainers, curriculum support	Primary outcome: (descriptive with statistical values): ↑*nutrition related knowledge, skills, and behaviors; ↑*training program's impact on knowledge, skills, and behavior of peer educators Secondary outcomes measured (descriptive with statistical values): n/a Statistical Model: paired t-test	Follow up period: 6 months after post-survey

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Learner-centered nutrition education improves folate intake and food-related behaviors in nonpregnant, low-income women of childbearing age	Cena ER, Joy AB, Heneman K, et al. Learner-centered nutrition education improves folate intake and food-related behaviors in nonpregnant, low-income women of childbearing age. <i>J Am Diet Assoc.</i> 2008;108(10):1627-1635. doi:10.1016/j.jada.2008.07.017	Cena et al, 2008	Study to evaluate the effect of learner-centered nutrition education on folate intake and food-related behaviors among nonpregnant, low-income women of childbearing age, compared to education unrelated to nutrition.	Cluster, Randomized Control Trial	1. Folate focused nutrition education lesson a. Group discussion b. Participatory activities c. Worksheets d. Visual aids e. Cooking demonstrations f. Instructor explanations	Frequency: 1x, 2.5 hours Duration: 1 day	N: 157 (Intervention: N=77; Control: N=78) Age Range: 18-45 years old Age (Mean ± SD): N/A Gender/Sex: 100% Female Race/Ethnicity: 56.5% Hispanic, 35.5% White, 4% Native American, 1% Asian/Pacific Islander, 3% Mixed Ethnicities Specific Population/ SES: low-income, nonpregnant women of childbearing age Completion Rate: N/A Inclusion/Exclusion criteria (% excluded): Inclusion: Low-income, nonpregnant women, aged 18-45 years, able to read and understand English or Spanish, and primary purchaser and preparer of food for herself and family, within one of five selected California counties. Excluded if women had graduated from the Food Stamp Nutrition Education (FSNE) program before or if they had participated in any formal nutrition education programs during the previous year. Education: 26% Elementary, 35% High School Diploma, 29% Some College Credit, 4% Bachelor's Degree or above, 7% other Location: five California counties	Type of Intervention: nutrition education Delivery Method: in person, group Frequency: 1x, 2.5 hours Duration: 1 day Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): 99% Theoretical Methods: learner centered approaches for educating low-income clients	Research Setting: in-person group Program Delivered By: FSNE representatives Partners: FSNE, SNAP offices, WIC offices Partnership Role: recruitment sites, programmatic support	Primary outcome: (descriptive with statistical values): ↑*change in folate intake after a nutrition education intervention; ↑ food-related behaviors; ↑ providing nutrition education to food stamp recipients & positive dietary changes; ↑ influence of the nutrition lesson on folate intake and food-related behaviors among WIC participants Statistical Model: ANCOVA, chi squared	Follow up period: post survey 1 month after last lesson
Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial	Gans KM, Risica PM, Keita AD, et al. Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial. <i>Int J Behav Nutr Phys Act.</i> 2018;15(1):80. doi:10.1186/s12966-018-0704-2	Gans et al, 2018	'Live Well, Viva Bien' (LWVB) was a cluster, randomized controlled trial designed to evaluate the efficacy of a multicomponent intervention that included discount, mobile fresh F&V markets in conjunction with a nutrition education intervention.	Cluster, Randomized Control Trial	1. Mobile fruit and vegetable market 2. Nutrition education a. Monthly newsletter b. Educational DVDs c. Recipe cards d. Chef demonstrations + taste tests	Frequency: 2 six week educational campaigns with mobile markets on-site 2x/month Duration: 1 year	N: 1597 (Intervention - N = 837; Control - N = 760) Age Range: 18 years or older Age (Mean ± SD): Intervention: 53.5 years; Control: 53.9 years Gender/Sex: Intervention: 74.3% Female, 24.1% Male; Control: 72.4% Female, 27.6% Male Race/Ethnicity: Intervention: 49.5% White, 18.1% Black, 18.4% Mixed, 14% Other, 55.2% Hispanic; Control: 46.2% White, 16.4% Black, 20.8% Mixed, 16.6% Other, 52.4% Hispanic Specific Population/ SES: low income, SNAP recipients, food insecure Completion Rate: N/A Inclusion/Exclusion criteria (% excluded): Inclusion: 18 years of age or older; be full-time residents of the housing complex; shop for their household's food at least half of the time; not have any major medical conditions that would prevent them from participating in study activities or events; not be planning to move in the next year; be able to read and understand either English or Spanish; and have access to a Digital Video Disk player or computer. Education: 35.2% 1st - 9th grade, 45.7% Grades 10-12, 15% Vocational/Tech/Some college, 4.1% BA degree/Post graduate; Control: 34.6% 1st - 9th grade, 45.8% Grades 10-12, 15.6% Vocational/Tech/Some college, 4% BA degree/Post graduate Location: Providence County, Rhode Island	Type of Intervention: mobile F&V markets plus nutrition education (recipe cards, DVDs, newsletters) Delivery Method: in person, group Frequency: 2 six week educational campaigns Duration: 1 year Data Collection Method: survey/questionnaire, focus groups Attrition Rate (total N and remaining): 6 months: intervention group - 83%, control group - 87% Theoretical Methods: Social Cognitive Theory	Research Setting: public housing Program Delivered By: community staff, chef, farmer's market Partners: Brown University, Pawtucket and Woonsocket Housing Authorities, community chef, farmer's market Partnership Role: programmatic staff and support, recruitment site	Primary outcome: (descriptive with statistical values): ↑*Fruit and vegetable intake; ↑* Fruit and Vegetable Habits Questionnaire Statistical Model: linear mixed-effects models	Follow up period: 6 and 12 month follow-up
Nudging Urban Food Pantry Users in Utah Toward Healthier Choices	Coombs C, Savoie-Roskos MR, LeBlanc H, Gast J, Hendrickson J. Nudging Urban Food Pantry Users in Utah Toward Healthier Choices. <i>Health Promot Pract.</i> 2021;22(5):685-691. doi:10.1177/1524839920904688	Coombs et al, 2020	The primary objective of this study was to determine the impact of nudges on food pantry users' self-reported selection and use of targeted healthy foods. The second-ary objective was to identify associations between the reported impact of the nudges among different demo-graphics to determine the need to tailor nudge interventions to specific pantry populations.	One Group: Post Only	1. Food pantry nudges toward healthier options	Frequency: at least 1x/month Duration: 1 month	N: 158 Age Range: 6% 18-24 yo, 18% 25-34 yo, 24% 35-44 yo, 16% 45-54 yo, 35% 55+ yo, 1% no response Age (Mean ± SD): N/A Gender/Sex: 69% Female, 30% Male, 1% no response Race/Ethnicity: 4% American Indian/Alaskan Native, 1% Asian, 4% Black, 1% Native Hawaiian/Pacific Islander, 71% White, 19% no response. Ethnicity: 39% Hispanic, 51% non-Hispanic, 10% no response Specific Population/ SES: food pantry recipients Completion Rate: N/A Inclusion/Exclusion criteria (% excluded): Inclusion criteria for pantries included an established partnership with the Thumbs Up program for at least 4 months. A convenience sample of participants were recruited as they waited to enter the food pantry. Participants were required to be ≥18 years of age. Education: N/A Location: Utah	Type of Intervention: nutrition education through nudges Delivery Method: in-person Frequency: at least 1x/month Duration: 1 month Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Behavioral economic theory	Research Setting: Food pantries Program Delivered By: pantry shelf labels, SNAP-Ed educators Partners: food pantries, Thumbs Up, SNAP-Ed Partnership Role: program development	Statistical Model: chi square tests Primary outcome: (descriptive with statistical values): healthier choices ↑*; healthier food selection ↑; recipe preparation at home ↑; dietary quality ↑*	Follow up period (3, 6, 12 months, etc): none

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Nutrition Education Among Low-Income Older Adults: A Randomized Intervention Trial in Congregate Nutrition Sites	Mitchell RE, Ash SL, McClelland JW. Nutrition education among low-income older adults: a randomized intervention trial in Congregate Nutrition sites. Health Educ Behav. 2006;33(3):374-392. doi:10.1177/1090198105276212	Mitchell et al, 2006	The purpose of this study was to examine the effects of a five-session nutrition education module on changing herbal and other dietary supplement use (and discussion of such use with health care professionals) among limited-resource older adults.	Randomized Control Trial	1. Nutrition education a. Appropriate use of supplements 2. Discussions	Frequency: 1x/week Duration: 5 weeks	N: 1006 Age Range: not provided Age (Mean ± SD): 77.27 ± 8.10 Gender/Sex: 78% Female, 22% Male Race/Ethnicity: 60.1% White, 39% African American, 0.9% Other Specific Population/SES: Low income, older adults Participation Rate: 70% Inclusion/Exclusion criteria (% excluded): Exclusion for age under 60 Education: 43.1% high school degree or greater	Type of Intervention: nutrition education Delivery Method: in-person, group Frequency: 1x/week Duration: 5 weeks Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): Experimental: 66%; Control: 73% Theoretical Method: Social Cognitive Theory	Research Setting: Congregate Nutrition sites Program Delivered By: Extension educators Partners: North Carolina State University Cooperative Extension Family and Consumer Science educators; Partners In Wellness Partnership Role: program development and implementation	Statistical Model: Hierarchical (mixed effects) linear regression Primary outcome: (descriptive with statistical values): Experimental group participants: ↑* increase multivitamin use, ↑* increase calcium supplement use, ↑* read labels of dietary supplements, ↑* carry a supplement and/or medication list, and ↑* discuss such use with their health care professional	Follow up period (3, 6, 12 months, etc): 4 weeks after module
Nutrition education via a touchscreen: a randomized controlled trial in Latino immigrant parents of infants and toddlers	Thompson DA, Joshi A, Hernandez RG, et al. Nutrition education via a touchscreen: a randomized controlled trial in Latino immigrant parents of infants and toddlers. Acad Pediatr. 2012;12(5):412-419. doi:10.1016/j.acap.2012.03.020	Thompson et al, 2012	To evaluate the immediate increase in nutrition and feeding knowledge of low-income, Spanish-speaking Latino immigrant parents following 5 interactive touchscreen modules, drawn from Bright Futures Guidelines.	Randomized Control Trial	1. Child nutrition and feeding lessons a. Breastfeeding b. Formula feeding c. Introducing solids d. Milk e. Juice	Frequency: one time Duration: 25 minutes	N: 273 eligible, 160 participated (Control N=80; Intervention N=80) Age Range: not provided Age (Mean ± SD): Intervention 27.8 ± 5.3; Control 27.3 ± 5.1 Gender/Sex: Intervention 94% Female, 6% Male; Control 91% Female, 9% Male Race/Ethnicity: 100% Latino Specific Population/SES: Low-income, Spanish speaking Latino parents of children < 3 Participation Rate: 58.6% Inclusion/Exclusion criteria (% excluded): Eligible participants were Spanish-speaking self-reported Latino adults who were the primary caregiver to a child < 3 years of age. Parents who had a child < 3 years with significant medical issues requiring special nutritional or feeding needs were excluded. Education: Intervention 41% 6 years or less, 49% 7-12 years, 10% some or all of university degree; Control 41% 6 years or less, 53% 7-12 years, 6% some or all of university degree Location: Baltimore, Maryland	Type of Intervention: nutrition education Delivery Method: touchscreen monitor Frequency: one time Duration: 25 minutes Data Collection Method: questionnaire/survey Attrition Rate (total N and remaining): 99% Theoretical Methods: Health Belief Model	Research Setting: hospital-based academic pediatric clinics Program Delivered By: touchscreen computer Partners: Bright Futures, pediatricians Partnership Role: curriculum support, site support	Primary outcome: (descriptive with statistical values): ↑* mean total summed nutrition and feeding knowledge from intervention group compared to controls; ↑* mean domain-specific summed knowledge scores for intervention compared to control group Statistical Model: Wilcoxon-Mann-Whitney tests, t-test, chi-squared test	Follow up period: n/a
Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women	Rustad C, Smith C. Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women. J Nutr Educ Behav. 2013;45(6):490-498. doi:10.1016/j.jneb.2013.06.009	Rustad et al, 2013	To assess the impact of a short-term nutrition intervention (three nutrition and health education sessions) on low-income women.	One group: Pre/ Post	1. 3 nutrition education sessions a. Topics i. Nutrition overview ii. Healthy cooking and budgeting iii. Food security b. Lesson components i. Interactive lectures ii. Activities iii. Demonstrations	Frequency: 75-90 min/week Duration: 6 weeks	N: 194 Age Range: 23-45 years of age Age (Mean ± SD): 35.2 ± 9.6 Gender/Sex: 100% Female Race/Ethnicity: 36% American Indian, 32% African American, 15% White, 13% Mixed/other; 3% Hispanic, 1% Asian Specific Population/SES: Low-income women Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): English speaking, low-income women living in Minneapolis/St. Paul area. Education: 31% some high school, 25% high school diploma/GED, 31% some undergrad/college/technical/vocational school, 10% completed undergraduate/college/technical/vocational school, 3% completed graduate/professional school Location:	Type of Intervention: Nutrition education Delivery Method: In person, group Frequency: 75-90 min/week Duration: 6 weeks Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): 60.8% (118 of 194) Theoretical Model: None mentioned	Research Setting: Community organization, Schools Program Delivered By: trained graduate students Partners: University of Minnesota Minneapolis - St. Paul Partnership Role: Research setting	Statistical Model: Descriptive and frequency statistics, paired t tests Primary outcome: (descriptive with statistical values): ↑* nutrition knowledge, ↑* dietary behaviors, ↑* physical activity	Follow up period (3, 6, 12 months, etc): n/a
Offering More Than Food: Outcomes and Lessons Learned from a Fresh Start food pantry in Texas	Martin KS, Redelfs A, Wu R, Bogner O, Whigham L. Offering More Than Food: Outcomes and Lessons Learned from a Fresh Start food pantry in Texas. Journal of Hunger & Environmental Nutrition. 2019;14(1-2):70-81. doi:10.1080/19320248.2018.1512925	Martin et al, 2019	Evaluate the progress and outcomes of the Fresh Start program, based on Freshplace, to address the root causes of hunger in El Paso, Texas.	One group: Pre/ Post	1. Member choice food pantry 2. Individual coaching sessions 3. Welcoming culture	Frequency: 2x/month for 3 months then monthly for 6 months Duration: 9 months	N: 70 Age Range: not provided Age (Mean ± SD): 38.5 ± 10.9 Gender/Sex: 12.9% Male, 87.1% Female Race/Ethnicity: 92.9% Hispanic, 5.7% Asian/Pacific Island, 1.4% Other Specific Population/SES: Food Pantry Recipients Participation Rate: n/a Inclusion/Exclusion criteria (% excluded): not provided Education: 45.6% Less than high school degree, 54.4% high school/GED or greater Location: El Paso, Texas	Type of Intervention: case management and nutrition education Delivery Method: In person, group and 1:1 Frequency: 2x/month for 3 months then monthly for 6 months Duration: 9 months Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): 71.4% (20 active from 70 total) Theoretical Methods: Socio-ecological approach	Research Setting: Food pantries Program Delivered By: Trained coaches Partners: University of Connecticut Freshplace Partnership Role: More Than Food curriculum development	Statistical Model: Paired t-tests, McNemars test, generalized estimating equation, general linear mixed model analysis Primary outcome: (descriptive with statistical values): Food security ↑*, self-sufficiency ↑*, diet quality ↑*	Follow up period (3, 6, 12 months, etc): 4 and 9 months

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
Perceptions of nutrition education classes offered in conjunction with a community-supported agriculture intervention among low-income families	Lu I, Hanson KL, Jilcott Pitts SB, et al. Perceptions of nutrition education classes offered in conjunction with a community-supported agriculture intervention among low-income families. Public Health Nutr. 2021;24(10):3028-3036. doi:10.1017/S1368980020002773	Lu et al, 2020	To examine participants' experiences with nutrition education classes that were implemented with and designed to complement a cost-offset community-supported agriculture (CSA) programme.	Qualitative	1. 9 nutrition education lessons 2. Locally grown produce 3. Hands on food preparation 4. Recipe tastings	Frequency: 9 classes over the duration (different intervals) Duration: 15-24 weeks	N: 96 Age Range: not provided Age (Mean ± SD): 37.5 ± 8.3 in 2016; 38.4 ± 7.8 in 2017 Gender/Sex: 94% Female, 6% Male in 2016; 97% Female, 3% Male in 2017 Race/Ethnicity: 19% Black, 64% White (Non-Hispanic), 17% Other/Unknown in 2016; 16% Black, 68% White (Non-Hispanic), 16% Other/Unknown in 2017 Specific Population/SES: Low-income Participation Rate: 54% in 2016, 42% in 2017 Inclusion/Exclusion criteria (% excluded): Inclusion: families that participated in the F3HK intervention and were parents or legal guardians of one or more children aged 2-12 years. Exclusion: those who had participated in a CSA in the past 3 years. Education: not provided Location: 12 farms across 4 states (Rural and metropolitan communities in New York, North Carolina, Vermont and Washington (USA))	Type of Intervention: Nutrition education Delivery Method: In person, group Frequency: 9 classes over the duration (different intervals) Duration: 15-24 weeks Data Collection Method: Focus groups, qualitative Attrition Rate (total N and remaining): n/a Theoretical Model: None mentioned	Research Setting: CSA farms Program Delivered By: Educators (who completed a two-hour, web-based training on the curriculum's organization and content, as well as best practices for educating adults) Partners: advisory committee of researchers and Cooperative Extension education representatives from each of the four states Partnership Role: education curriculum input	Statistical Model: coded and analyzed qualitative analysis Primary outcome: (descriptive with statistical values): Recipe ideas ↑, caregiver cooking and food preservation skills ↑, caregiver nutrition knowledge ↑, improved home cooking behaviors ↑, child knowledge and skills ↑, sense of community and enhanced CSA experience ↑	Follow up period (3, 6, 12 months, etc): n/a
Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents	Dickin KL, Hill TF, Dollahite JS. Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents. J Acad Nutr Diet. 2014;14(6):945-950. doi:10.1016/j.jand.2013.09.029	Dickin et al, 2014	The goal of this pilot study was to test an integrated nutrition and parenting education intervention, delivered across 8 workshops, for low-income families with children ages 3-11 years within the Expanded Food and Nutrition Education Program in New York State.	One group: Pre/Post	1. Parent nutrition and physical activity education a. Fruits and vegetables b. Limiting high-fat, high-sugar foods c. Drinking water or low fat milk instead of SSB d. Sensible servings e. Playing actively f. Limiting screen time	Frequency: 90 minutes, 1x/week Duration: 8 weeks	N: 210 Age Range: not provided Age (Mean ± SD): 35.3 ± 10.3 Gender/Sex: 93.3% Female, 6.7% Male Race/Ethnicity: Latino 65.7%, White 30% Black 10.5%, Other 2.9% Specific Population/SES: Low-income Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): Low income parents and caregivers to children ages 3-11 Education: less than high school education 45.7%, high school graduate 30.5%, more than high school education 23.8% Location: Five Expanded Food and Nutrition Education Program sites in New York State	Type of Intervention: Nutrition education and physical activity Delivery Method: in person, group Frequency: 90 minutes, 1x/week Duration: 8 weeks Data Collection Method: Survey/Questionnaire (16 item behavior checklist) Attrition Rate (total N and remaining): n/a Theoretical Methods: Socioecological perspective	Research Setting: Community Organization Program Delivered By: Expanded Food and Nutrition Education Program paraprofessional community nutrition educators Partners: n/a Partnership Role: n/a	Statistical Model: pre/post test analysis, paired t tests, Wilcoxon signed rank test Primary outcome: (descriptive with statistical values): Parent frequency of intake and activity: Fruit ↑*, Vegetables ↑*, Less soda ↑*, low fat dairy ↑*, physical activity (30 min/day) ↑ Child frequency of intake and activity: Fruit ↑*, Vegetables ↑*, Less soda ↑*, low fat dairy ↑*, physical activity (30 min/day) ↑* Parenting and home environment: parent eats with child ↑, lets child decide how much to eat ↑*, take out or fast food less available ↑*, energy dense snacks less available ↑*, fruit available/offered ↑*	Follow up period (3, 6, 12 months, etc): n/a
Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants Related Behavior of Participants	Rublee M, Yerxa K, White A, Bolton J, Savoie K. Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants. The Journal of Extension. 2019;57(2). https://tigerprints.clemson.edu/joe/vol57/iss2/10	Rublee et al, 2019	To investigate the impact of 4 nutrition lessons on healthful food pantry staples that are not usually selected on food-related behaviors and food security among food pantry clients.	Quasi-Experimental	1. 4 nutrition education lessons a. Beans b. Rice c. Rolled oats d. Meat	Frequency: monthly Duration: 4 education lessons, 3 min videos; Train the trainer- 4 classes, 3.5hrs each	N: 136 (intervention: 41, comparison: 95) Age Range: not provided Age (Mean ± SD): Intervention 47.41 ± 13.7; Comparison 53.8 ± 14.0 Gender/Sex: Intervention 71% Female, 29% Male; Comparison 76% Female, 24% Male Race/Ethnicity: Intervention 95% White, 5% Non-White; Comparison 90% White, 10% Non-White Specific Population/SES: Food Pantry Recipients Participation Rate: 91% beans lesson, 88% rice lesson, 71% rolled oats lesson, 70% meat lesson Inclusion/Exclusion criteria (% excluded): 18 years or older and met the specific criteria for food pantry use Education: Intervention 10% < high school, 90% ≥ high school; Comparison 25% < high school, 75% ≥ high school Location: Maine	Type of Intervention: Nutrition Education Delivery Method: In person, train the trainer, mail-in survey Frequency: monthly Duration: 4 education lessons, 3 min videos; Train the trainer- 4 classes, 3.5hrs each Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): N/A Theoretical Methods: N/A	Research Setting: Food Pantries Program Delivered By: Trained volunteers Partners: University of Maine Partnership Role: Researchers	Statistical Model: Paired Sampled t-tests Bonferroni Correction Primary outcome: (descriptive with statistical values): ↑* nutrition behavior and food safety, ↑* in food security	Follow up period (3, 6, 12 months, etc): N/A

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Results of a Pilot Intervention in Food Shelves to Improve Healthy Eating and Cooking Skills Among Adults Experiencing Food Insecurity	Caspi CE, Davey C, Friebur R, Nanney MS. Results of a Pilot Intervention in Food Shelves to Improve Healthy Eating and Cooking Skills Among Adults Experiencing Food Insecurity. <i>J Hunger Environ Nutr.</i> 2017;12(1):77-88. doi:10.1080/19320248.2015.1095146	Caspi et al, 2017	The aim of this study was to evaluate the effectiveness of a six-session pilot cooking and nutrition education intervention on dietary habits of food pantry clients.	One group: Pre/ Post	1. Hands-on cooking demonstration 2. Community meal sampling 3. Nutrition education 4. Take home ingredients for recipe clients.	Frequency: 2.5hrs, weekly Duration: 6 weeks	N: 63 Age Range: 19 - 67 Age (Mean ± SD): 42 ± 12.7 Gender/Sex: 87% Female; 13% Male Race/Ethnicity: White 33%, Black 36%, Native American 11%, Asian 7%, Mixed 13%; Hispanic 82% Specific Population/SES: Food Pantry Recipients Participation Rate: 71% Inclusion/Exclusion criteria (% excluded): At least 18 years old, able to speak and read English, live in a household that had visited one of the participating food shelf to obtain food in last 30 days; only one member per household could participate Education: less than high school 13%; high school grad 42%; more than high school 44% Location: Minneapolis and St. Paul, Minnesota	Type of Intervention: pilot cooking and nutrition education intervention; 6 session class in four food shelves Delivery Method: In person, take home ingredients Frequency: 2.5hrs, weekly Duration: 6 weeks Data Collection Method: survey Attrition Rate (total N and remaining): n/a Theoretical Methods: N/A	Research Setting: food pantries Program Delivered By: University of Minnesota Extension staff and local volunteers Partners: Share Our Strength (No Kid Hungry Campaign + Cooking Matters) Partnership Role: Share Our Strength (No Kid Hungry Campaign + Cooking Matters) - intervention = Cooking Matters Course; Campaign = No Kid Hungry; Share Our Strength = collaboration University of Minnesota - staff participated in the intervention	Statistical Model: Paired t tests Cronbach's Alpha Nutrition Data Systems for Research (NDSR) nutrient calculation software Primary outcome: (descriptive with statistical values): ↑ HEI score; Healthy cooking score	Follow up period (3, 6, 12 months, etc): 30 days after completion
SNAP-Ed (Supplemental Nutrition Assistance Program—Education) increases long-term food security among Indiana households with children in a randomized controlled study.	Rivera RL, Maulding MK, Abbott AR, Craig BA, Eicher-Miller HA. SNAP-Ed (Supplemental Nutrition Assistance Program—Education) Increases Long-Term Food Security among Indiana Households with Children in a Randomized Controlled Study. <i>J Nutr.</i> 2016;146(11):2375-2382. doi:10.3945/jn.116.231373	Rivera et al, 2016	The objective of this study was to evaluate the long-term impact of the Indiana SNAP-Ed on food security among households with children.	Randomized Control Trial	1. Nutrition education a. USDA MyPlate b. Food labels c. Whole grains d. Fruits and vegetables e. Dairy f. Protein g. Fats h. Food safety i. Healthy meals	Frequency: N/A Duration: N/A	N: 575 (Control: 280; Intervention: 295) Age Range: Control 51% 18-30, 42% 31-50, 7% ≥ 51; Intervention 58% 18-30, 36% 31-50, 6% ≥ 51 Age (Mean ± SD): not provided Gender/Sex: Control 92% Female, 8% Male; Intervention 91% Female, 9% Male Race/Ethnicity: Control 94% Non-Hispanic White, 6% Other; Intervention 97% Non-Hispanic White, 3% Other Specific Population/SES: SNAP Recipients, SNAP Ed Eligible Participation Rate: 74.2% at post intervention, 57.0% at 1 year follow up Inclusion/Exclusion criteria (% excluded): Participants included only SNAP-Ed, or SNAP-eligible population with children. Participants must not have received SNAP-Ed lessons in the past year and had to be ≥ 18 y old, Indiana residents living in households with ≥ 1 child aged <18 years old, willing to complete a survey at all 3 assessment time points, willing to stay in touch with paraprofessionals for the duration of the study, and willing to wait 1 year to receive SNAP-Ed lessons. Education: Control 6% no high school diploma, 19% high school diploma, 18% GED, 33% some college, 15% associate's degree, 9% bachelor's or higher; Intervention 9% no high school diploma, 23% high school diploma, 20% GED, 30% some college, 13% associate's degree, 5% bachelor's or higher Location: Indiana	Type of Intervention: Nutrition Education Delivery Method: one-on-one in the participants home or in a group setting at a community location, such as at a food pantry, school, or nutrition assistance program office or clinic Frequency: N/A Duration: N/A Data Collection Method: Survey/ questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Social Cognitive Theory	Research Setting: Purdue University Health and Human Sciences Cooperative Extension Program Delivered By: SNAP Ed delivered by paraprofessionals Partners: N/A Partnership Role: N/A	Statistical Model: linear mixed model unstructured covariance model Primary outcome: (descriptive with statistical values): ↑ Food Security	Follow up period (3, 6, 12 months, etc): 1 year
Teaching nutrition education in adult learning centers: Linking literacy, health care, and the community	Murphy PW, Davis TC, Mayeaux EJ, Sentell T, Arnold C, Rebouche C. Teaching nutrition education in adult learning centers: linking literacy, health care, and the community. <i>J Community Health Nurs.</i> 1996;13(3):149-158. doi:10.1207/s15327655jchn1303_2	Murphy et al, 1996	The purpose of this study was to design a nutrition curriculum that could be used in adult educational sites and to measure its efficacy toward increasing nutrition knowledge and changing dietary practices.	Quasi-Experimental	1. Nutrition education a. Food groups b. Vitamins c. Portion sizes d. Reading food labels e. Meal planning f. Low-fat snack choices g. Identifying nutritive value of foods	Frequency: 1hr/day Duration: 8 days over 2 weeks	N: 28 Age Range: not provided Age (Mean ± SD): 26 (no SD) Gender/Sex: 86% Female, 14% Male Race/Ethnicity: 100% Black Specific Population/SES: Low literacy Participation Rate: 75%, replacements recruited then 100% Inclusion/Exclusion criteria (% excluded): Adults enrolled in two adult basic education reading classes at Hamilton Terrace Learning Center, a welfare-to-work site in Shreveport, Louisiana Education: All participants had a reading level at or below 6th grade Location: Shreveport, LA	Type of Intervention: nutrition education Delivery Method: group Frequency: 1hr/day Duration: 8 days over 2 weeks Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): N/A Theoretical Methods: N/A	Research Setting: Community Organization Program Delivered By: Adult educators and health professionals Partners: Louisiana State University Medical Center Partnership Role: Researchers	Statistical Model: Kruskal Wallis One Way Analysis of Variance Primary outcome: (descriptive with statistical values): ↑ knowledge of food measurements and portion sizes increased significantly as did their ability to read labels; ↔ self-reported eating behavior did not change	Follow up period (3, 6, 12 months, etc): 2 months

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
The Effect of Food Stamp Nutrition Education on the FoodInsecurity of Low-income Women Participants	Eicher-Miller HA, Mason AC, Abbott AR, McCabe GP, Boushey CJ. The effect of Food Stamp Nutrition Education on the food insecurity of low-income women participants. J Nutr Educ Behav. 2009;41(3):161-168. doi:10.1016/j.jneb.2008.06.004	Eicher-Miller et al, 2009	To determine the effect of Food Stamp Nutrition Education (FSNE) in Indiana on participants' food insecurity and food insufficiency.	Randomized Control Trial	1. Nutrition education a. MyPyramid b. Food groups c. Food safety d. Shopping behaviors e. Resource management f. Wellness 2. Food selection 3. Food preparation	Frequency: 30-60min weekly Duration: 5 weeks	N: 219 (Experimental: 137; Control: 82) Age Range: Experimental: 66.9% 18-39, 13.2% 40-59, 19.9% 60-100; Control: 67.1% 18-39, 12.2% 40-59, 20.7% 60-100. Age (Mean ± SD): not provided Gender/Sex: 100% Female Race/Ethnicity: 96.8% non-Hispanic white, 2.3% Hispanic, 0.5% Black, 0.5% other Specific Population/SES: Low Income, SNAP Ed Eligible Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): Participants in this study were women who were eligible to receive FSNE services. Criteria for Indiana FSNE participation include being age 18 or older; qualified to receive food stamps or under 130% of the income-to-poverty ratio; and head of household, or the person responsible for food purchases and food dollar management. Men were excluded Education: Experimental: 68.6% have a high school diploma, 31.4% do not have a high school diploma; Control: 69.5% have a high school diploma, 30.5% do not have a high school diploma Location: 24 Indiana counties	Type of Intervention: Nutrition Education Delivery Method: In person, 1:1, group Frequency: 30-60min weekly Duration: 5 weeks Data Collection Method: Survey/Questionnaire, Interviews Attrition Rate (total N and remaining): n/a Theoretical Methods: Social Cognitive Theory	Research Setting: Remote Community Organization Program Delivered By: Food Stamps Nutrition Education operators Partners: n/a Partnership Role: n/a	Statistical Model: 2-sample t test Satterthwaite test Primary outcome: (descriptive with statistical values): †* Upon completion of the lessons, there were significantly more food-sufficient and food secure participants in the experimental group than the control group	Follow up period (3, 6, 12 months, etc): immediately after final lesson
The food stamp nutrition education program's (FSNEP) impact on selected food and nutrition behaviors among Texans	Anding, Jenna; Fletcher, Rickie D; Van Laanen, Peggy; Supak, Cheryl. The Food Stamp Nutrition Education Program's (FSNEP) Impact on Selected Food and Nutrition Behaviors Among Texans. Accessed February 3, 2023. https://archives.joe.org/joe/2001december/rb4.php	Anding et al, 2001	To assess the impact of the Food Stamp Nutrition Education Program (FSNEP)'s impact on dietary intakes, food safety and food resource management skills among limited resource individuals in TX.	Retrospective; One Group - Post/Pre	1. Nutrition education a. Food guide pyramid b. Dietary guidelines for Americans c. Food safety d. Food resource management	Frequency: minimum of 5 lessons Duration: n/a	N: 481 Age Range: at least age 18; at least half under age 40 Age (Mean ± SD): not provided Gender/Sex: 94.3% Female, 5.7% Male Race/Ethnicity: 8.7% African American, 32.2% Caucasian, 55.8% Hispanic, 3.3% Other/ Multi-racial Specific Population/SES: Low Income, SNAP Recipients Participation Rate: 95% Inclusion/Exclusion criteria (% excluded): Those who participated in the FSNEP within the last year. Exclusion: Individuals who did not participate in FSNEP; individuals under 18 Education: 37.3% less than high school, 31.4% high school graduate, 22.7% some college, 6.8% college graduate, 1.7% graduate degree, 0.2% refused to answer Location: Texas	Type of Intervention: Nutrition Education Delivery Method: in person Frequency: minimum of 5 lessons Duration: n/a Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: N/a	Research Setting: Governmental Organization Program Delivered By: Trained, bilingual interviewers Partners: TX Department of Human Services Partnership Role: assisted with recruitment	Statistical Model: Paired t-tests Primary outcome: (descriptive with statistical values): † subjects reported increasing their intakes of grains, fruits, vegetables, dairy	Follow up period (3, 6, 12 months, etc): one month
The US Supplemental Nutrition Assistance Program—Education improves nutrition-related behaviors	Ryan-Ibarra S, DeLisio A, Bang H, et al. The US Supplemental Nutrition Assistance Program - Education improves nutrition-related behaviors. J Nutr Sci. 2020;9:e44. doi:10.1017/jns.2020.37	Ryan-Ibarra et al, 2020	The aim of this study was to measure whether participating in Supplemental Nutrition Assistance Program—Education (SNAP-Ed) interventions is associated with changes in meeting recommendations for healthy eating and food resource management behaviours, such as shopping, among low-income children, adolescents, and adults in eight states in the US Southeast.	One group: Pre/ Post	1. Nutrition education	Frequency: variable Duration: variable	N: 43,303 Age Range: not provided Age (Mean ± SD): not provided Gender/Sex: not provided Race/Ethnicity: not provided Participation Rate: 99.9% Inclusion/Exclusion criteria (% excluded): Participation in SNAP-ED in one of the 25 implementing agencies from 8 states in the Southeast. Education: not provided Location: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee	Type of Intervention: Nutrition Education Delivery Method: in person, group Frequency: variable Duration: variable Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Social Ecological Model	Research Setting: Non profit sponsored Program Delivered By: Administrators of SNAP Ed in 8 states Partners: SNAP-Ed implementing agencies Partnership Role: assisted in evaluation in their respective states	Statistical Model: t tests DerSimonian and Laird method Cochran's Q statistic Primary outcome: (descriptive with statistical values): † self-reported healthy eating and shopping/food resource management behaviours among adult, teen, and child participants.	Follow up period (3, 6, 12 months, etc): N/A

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries	Evans SH, Clarke P. Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries. Nonprofit and Voluntary Sector Quarterly. 2010;39(3):524-535. doi:10.1177/0899764009333053	Evans et al, 2010	Testing the capacity of two types of volunteers—“traditional” (experienced in social services) and “beneficiaries” (from the ranks of the nonprofit’s clientele)—to use an IT for client services at two food pantries.	Quasi-Experimental	1. Food pantry IT for client services a. Bilingual	Frequency: For volunteers: 2-3 training sessions, 2 hrs long Duration: Training: 5-6 hours. Project in 3 phases, each lasting 8 days	N: 39 (Traditional: 25 ; Beneficiaries:14) Age Range: Traditional: all retired; Beneficiary: ages 30-60s Age (Mean ± SD): not provided Gender/Sex: Traditional: 11.1% Male, 88.9% Female; Beneficiary: 100% Female Race/Ethnicity: Traditional: 88.9% Caucasian, 11.1% other; Beneficiary: 100% Hispanic Specific Population/SES: Food pantry volunteers Participation Rate: 38.5% Inclusion/Exclusion criteria (% excluded): Food pantry volunteers Education: Beneficiary: most had less than 8th grade education level Location: Los Angeles	Type of Intervention: IT/ Software nutrition education Delivery Method: In person, online Frequency: For volunteers: 2-3 training sessions, 2 hrs long Duration: Training: 5-6 hours. Project in 3 phases, each lasting 8 days Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: n/a	Research Setting: Food Pantries Program Delivered By: Trained food bank/pantry personnel and volunteers Partners: USC Partnership Role: Developed research program for IT software, trained volunteers to implement study	Statistical Model: t tests Primary outcome: (descriptive with statistical values): ↑ Evidence that diverse volunteers can be recruited and successfully trained to operate a complex IT for client services. Beneficiary volunteers (low income women without a formal education) mastered the technology and retained their enthusiasm to use it, equaling traditional volunteers (those that typically volunteer at various nonprofits) in these respects. However, traditional volunteers achieved more positive effects creating and distributing Quick! Help’s booklets than beneficiaries did	Follow up period (3, 6, 12 months, etc): n/a
Use of song as an effective teaching strategy for nutrition education in older adults	McClelland JW, Jayaratne KSU, Bird C. Use of song as an effective teaching strategy for nutrition education in older adults. J Nutr Gerontol Geriatr. 2015;34(1):22-33. doi:10.1080/21551197.2014.998327	McClelland et al, 2015	The objective of this study was to explore whether singing an educational song would be effective in improving older adults’ knowledge about nutrition.	Randomized Control Trial	1. Nutrition education songs	Frequency: 30-45min long lessons Duration: 5 sessions	N: 462 Age Range: not provided Age (Mean ± SD): 79 (no SD) Gender/Sex: 80% Female, 20% Male Race/Ethnicity: 64% African American, 35% White, 1% from other racial groups Specific Population/SES: Low income, older adults Participation Rate: 78.6% Inclusion/Exclusion criteria (% excluded): All older adults currently attending and receiving a hot meal daily at their selected congregate nutrition site Education: 44% less than high school (16% completed some grade school, 28% completed some high school), 56% were high school graduates (30%) or had some college vocational or technical school training (17%) and 9% had a college degree or higher education Location: 13 Counties in North Carolina	Type of Intervention: Nutrition Education via song Delivery Method: in person, group Frequency: 30-45min long lessons Duration: 5 sessions Data Collection Method: survey/questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Schema theory, Socioecological and Health Belief models	Research Setting: Congregate Nutrition Sites Program Delivered By: community nutrition education program Partners: NC State University Partnership Role: developed and implemented the study and hypothesis	Statistical Model: Independent samples t-test Primary outcome: (descriptive with statistical values): ↑song and lessons had statistically significant impact on nutrition knowledge	Follow up period (3, 6, 12 months, etc): n/a
Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants	Jantz C, Anderson J, Gould SM. Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants. J Nutr Educ Behav. 2002;34(5):252-260. doi:10.1016/s1499-4046(06)60103-6	Jantz et al, 2002	This research was conducted to measure the effectiveness of interactive multimedia (IMM) with low-income Hispanic persons.	Quasi-Experimental	1. Nutrition education a. Breakfast	Frequency: each module approx 15 minutes Duration: 1 multimedia lesson	N: 70 (Intervention n=36, control n=34) Age Range: not provided Age (Mean ± SD): not provided Gender/Sex: Intervention: Male 0%, Female 100%. Control: Male 8.8%, Female 91.2% Race/Ethnicity: Hispanic Specific Population/SES: Low income, Hispanic Participation Rate: 80% Inclusion/Exclusion criteria (% excluded): The program was targeted at low-income and Hispanic mothers; however any person over the age of 18 who had children was asked to participate Education: Intervention: Less than 9th grade 13.9%, 9th-12th grade 30.6%, diploma or GED 22.2%, some college credit 22.2%, bachelor’s degree 8.3%, other 2.8% Control: Less than 9th grade 11.8%, 9th-12th grade 47.1%, diploma or GED 20.6%, some college credit 11.8%, bachelor’s degree 2.9% other 5.9% Location: Colorado	Type of Intervention: nutrition education with interactive multimedia Delivery Method: online Frequency: each module approx 15 minutes Duration: 1 multimedia lesson Data Collection Method: Survey/Questionnaire Attrition Rate (total N and remaining): n/a Theoretical Methods: Educational Theory Stages of Change	Research Setting: Health Services Organization, Community Organization Program Delivered By: Online Partners: Colorado State University Partnership Role: study developers/evaluators	Statistical Model: paired t tests, independent sample t tests, chi-square tests, McNemar chisquare tests, and ANCOVA Primary outcome: (descriptive with statistical values): ↑ The most significant changes in the intervention group from pretest to post-test were seen in knowledge scores. Knowledge scores were reported as the percent correct responses. The mean knowledge scores increased from 30% correct at pretest to 80% correct at post-test in the intervention group.	Follow up period (3, 6, 12 months, etc): Retest given 7-10 days following first test

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/Effectiveness	Maintenance
Using sensory science to evaluate consumer acceptance of recipes in a nutrition education intervention for limited resource populations	Moore CJ, Lindke A, Cox GO. Using Sensory Science to Evaluate Consumer Acceptance of Recipes in a Nutrition Education Intervention for Limited Resource Populations. <i>J Nutr Educ Behav.</i> 2020;52(2):134-144. doi:10.1016/j.jneb.2019.07.012	Moore et al, 2020	This study used the principles of sensory science to evaluate consumer acceptance of the recipes included in the Food Talk curriculum to provide an objective basis for replacing or modifying specific recipes to yield greater acceptance among EFNEP participants. In addition, the study evaluated the degree to which recipe title and specific sensory attributes (ie, appearance, flavor, and texture) were related to ratings of overall liking, the relationship between overall liking of recipes and participants' reported intentions to engage in behaviors to improve diet quality, and age- and sex-related differences in the outcomes of interest.	One Group: Post Only	1. Nutrition education a. Vegetables b. Whole fruits c. Low fat/fat free dairy d. Protein variety e. Limit saturated and trans fats, sodium and sugar 2. Recipe tasting a. Low cost b. 15 minutes or less c. Incorporate 1 or more key recommendations from the 2015-2020 Dietary Guidelines	Frequency: one time tasting at EFNEP lesson Duration: 1 time per participant but 8 different total sessions	N: 828 Age Range: 13% (18-25), 25% (26-35), 20% (36-45), 17% (46-55), 10% (56-65), 12% (>65), 3% missing Age (Mean ± SD): not provided Gender/Sex: Female 79%, Male 17%, Missing 4% Race/Ethnicity: 60% African American/Black, 29% Caucasian/White, 1% American Indian or Alaska Native, 0% Asian, 3% Multiple Races, 6% Missing Specific Population/SES: SNAP-Ed eligible Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): 18 years and older, EFNEP participants Education: not provided Location: 12 counties in Georgia	Type of Intervention: nutrition education Delivery Method: in person Frequency: one time tasting at EFNEP lesson Duration: 1 time per participant but 8 different total sessions Data Collection Method: survey Attrition Rate (total N and remaining): n/a Theoretical Methods: Educational Theory	Research Setting: Extension agencies Program Delivered By: Trained research staff, paraprofessionals Partners: n/a Partnership Role: n/a	Statistical Model: Kruskal-Wallis tests Mann Whitney tests Primary outcome: (descriptive with statistical values): Results showed that 13 of the 16 recipes in the nutrition curriculum met the threshold for acceptable sensory quality, but 3 recipes did not →	Follow up period (3, 6, 12 months, etc): n/a
Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial	Clarke P, Evans SH, Neffa-Creech D. Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial. <i>Public Health Nutr.</i> 2019;22(4):714-725. doi:10.1017/S1368980018003117	Clarke et al, 2018	This study was conducted to evaluate an app that offers vegetable-based recipes, food tips, and no-cost strategies to help clients of food pantries.	Randomized Control Trial	1. 260 recipes in phone app VeggieBook 2. 83 vignettes with lessons on healthy food use, happier mealtimes, and budget-wise shopping	Duration: 10 weeks	N: 15 pantry sites (6 control, 9 intervention); 186 participants Age Range: not provided Mean age ± SD: not provided Gender/Sex: not provided Race/Ethnicity: not provided Specific Population/SES: clients of food pantries with at least one 9-14 yo child living at home Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): food pantry clients, household's main cook, had at least one other adult living in household, owned at least a basic cell phone Education: not provided Location: Los Angeles County	Type of Intervention: nutrition education Delivery Method: online (app based) Frequency: n/a Duration: 10 weeks, repeated measures Data Collection Method: interviews Attrition Rate (total N and remaining): not provided Theoretical Methods: n/a	Research Setting: food pantries Program Delivered By: app for mobile phones Partners: researchers Partnership Role: program and curriculum development	Statistical Model: Mann-Whitney tests Primary outcome: (descriptive with statistical values): * 38% more preparations of 'test vegetables' in intervention pantries compared to controls; * 1 greater assortment of vegetables for intervention compared to control pantries	Follow up period (3, 6, 12 months, etc): n/a
Improving Nutrition Education Newsletters for the Food Stamp Eligible Audience	Harmon AH, Grim BJ, Gromis JC. Improving nutrition education newsletters for the food stamp eligible audience. <i>Health Promot Pract.</i> 2007;8(4):394-402. doi:10.1177/1524839907304942	Harmon et al, 2007	The purpose of this study was to identify the types of nutrition newsletter content that reading clientele perceive as relevant to them in making healthy food choices consistent with sound dietary advice, and to identify ways newsletter design and wording affect the usefulness of the content.	Qualitative	Newsletters with nutrition education content	Frequency: one time	N: 55 (five focus groups) Age Range: young mothers, middle-aged, retired Mean age ± SD: not provided Gender/Sex: 80% female Race/Ethnicity: 40% African American, 55% Caucasian, and 5% Other Specific Population/SES: clients of food pantries Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): n/a Education: n/a Location: three regions in Pennsylvania	Type of Intervention: nutrition education Delivery Method: newsletter Frequency: one-time Duration: n/a Data Collection Method: focus groups Attrition Rate (total N and remaining): n/a Theoretical Methods: not provided	Research Setting: food pantries Program Delivered By: newsletters Partners: nutrition educators from Pennsylvania Nutrition Education Program; Penn State Survey Research Center Partnership Role: design, implementation, and evaluation	Statistical Model: n/a; qualitative Primary outcome: (descriptive with statistical values): Newsletters were seen as helpful way to communicate nutrition information when content is relevant to readers' own nutritional concerns seen as most helpful content. The nutrition concerns of clients mirrored their health concerns. Nutrition and health concerns made participants interested in newsletters and provided the motivation for reading them although layout and text format matter. Participants were most interested in topics related to diet and disease, diet and physical conditions or age, food substitutions to accommodate illness, and topics related to weight control.	Follow up period (3, 6, 12 months, etc): n/a

Appendix I. Evidence table summarizing results from review utilizing the RE-AIM framework with an equity lens

Study Name	Full Citation	Short Citation	Design Description	Study Design	Components of Nutrition Intervention	Dose/ Frequency	RE-AIM Dimensions				
							Reach	Implementation	Adoption	Efficacy/ Effectiveness	Maintenance
Successes and challenges of using a peer Mentor model for nutrition education within a food pantry: a qualitative study	Oliver TL, McKeever A, Shenkman R, Diewald LK. Successes and challenges of using a peer Mentor model for nutrition education within a food pantry: a qualitative study. BMC Nutr. 2020;6:27. doi:10.1186/s40795-020-00352-9	Oliver et al, 2020	This study evaluated a peer mentor model Community Cooks within an emergency food pantry to better understand the best approaches to deliver nutrition education among community residents.	Qualitative	1. Nutrition education on healthy food choices, lifestyle, and cooking information with peer mentors with hands-on activities	Frequency: 9, 60 minute peer mentor training sessions; 3, 60-minute community workshops Duration: sequence of 3 training sessions and 1 workshop repeated three times	N: 11 peer mentors Age Range: over 40 years old Mean age ± SD: not provided Gender/Sex: 100% women Race/Ethnicity: 40% White; 40% Black; 1% American Indian/Alaska Native; 1% Other Specific Population/SES: clients of emergency food pantries Participation Rate: 87% Inclusion/Exclusion criteria (% excluded): n/a Education: 40% high school or less; 60% some college or more Location: Montgomery County, Pennsylvania	Type of Intervention: nutrition education Delivery Method: in-person Frequency: 9, 60 minute peer mentor training sessions; 3, 60-minute community workshops Duration: sequence of 3 training sessions and 1 workshop repeated three times Data Collection Method: focus groups Attrition Rate (total N and remaining): not provided Theoretical Methods: Social Cognitive Theory and Social Ecological Model	Research Setting: emergency food pantry Program Delivered By: peer mentors Partners: Villanova University Fitzpatrick College of Nursing and Catholic Social Services, Cooking Matters Partnership Role: research and site support, curriculum support	Statistical Model: none, qualitative content analysis Primary outcome: (descriptive with statistical values): Thematic findings: 1) serving in the role as a peer mentor was an empowering experience which gave them a sense of community, purpose, and camaraderie; 2) the nutrition education was appropriately tailored towards those living with food insecurity; 3) the recipes required minimal cooking skills and included low-cost easily accessible foods available at the EFP; 4) the lack of community member engagement in the nutrition education workshops.	Follow up period (3, 6, 12 months, etc): n/a
Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods	Stein EC, Stowers KC, McCabe ML, White MA, Schwartz MB. Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods. Public Health Nutr. 2019;22(9):1717-1722. doi:10.1017/S1368980019000259	Stein et al, 2018	This study evaluated the effect of ingredient bundles and recipe tastings as a strategy to increase selection of healthy, target foods.	Quasi-Experimental	1. Ingredient bundles (measured ingredients with recipes) 2. Recipe tastings (kale, brown rice, whole-wheat pasta)	Frequency: 1 day during 1x/month visit N: 128 (tastings only), 160 (ingredient bundles + tastings), 160 (control) Age Range: not provided Mean age ± SD: not provided Gender/Sex: not provided Race/Ethnicity: not provided Specific Population/SES: clients of food pantries Participation Rate: not provided Inclusion/Exclusion criteria (% excluded): visit pantry 1 time per month Education: not provided Location: Bridgeport, Connecticut	Type of Intervention: nutrition education Delivery Method: in-person Frequency: 1 day during 1x/month visit to pantry Duration: 3 weeks Data Collection Method: in-person, direct observations Attrition Rate (total N and remaining): not provided Theoretical Methods: not provided	Research Setting: food pantries Program Delivered By: community chef, pantry volunteers and staff Partners: pantry director, coordinator, staff, and volunteers; community chef Partnership Role: research and site support	Statistical Model: chi square tests using Bonferroni-adjusted levels; logistic regression controlling for family size and intervention week Primary outcome: (descriptive with statistical values): Compared with recipe tastings only (n 128), tasting + ingredient bundle clients were 2.67 times (95% CI: 1.82, 3.54) more likely to select kale, 7.67 times (95% CI: 3.31, 14.13) more likely to select brown rice and 11.43 times (95% CI: 2.88, 31.85) more likely to select whole-wheat pasta. No differences between recipe tastings and the Control group were found.	Follow up period (3, 6, 12 months, etc): n/a	

Appendix II. Intervention components utilized within each nutrition education program

Study Title	Intervention Components*									
	Didactic education/teaching	Cooking demonstrations	Take home food/client choice	Taste test/Recipe testing	Online/App-based	Nudges	Referrals to community resources	Coaching/counseling	Incentives	Market tour
Offering More Than Food: Outcomes and Lessons Learned from a Fresh Start food pantry in Texas	●		●			●		●		
Perceptions of nutrition education classes offered in conjunction with a community-supported agriculture intervention among low-income families	●			●						
Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents	●									
Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants Related Behavior of Participants	●									
Results of a Pilot Intervention in Food Shelves to Improve Healthy Eating and Cooking Skills Among Adults Experiencing Food Insecurity	●	●	●	●						
SNAP-Ed (Supplemental Nutrition Assistance Program–Education) increases long-term food security among Indiana households with children in a randomized controlled study.	●									
Teaching nutrition education in adult learning centers: Linking literacy, health care, and the community	●									
The Effect of Food Stamp Nutrition Education on the FoodInsecurity of Low-income Women Participants	●									
The food stamp nutrition education program's (FSNEP) impact on selected food and nutrition behaviors among Texans	●									
The US Supplemental Nutrition Assistance Program–Education improves nutrition-related behaviors	●									
Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries	●									
Use of song as an effective teaching strategy for nutrition education in older adults	●									
Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants	●				●					
Using sensory science to evaluate consumer acceptance of recipes in a nutrition education intervention for limited resource populations	●			●						
Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial	●				●					
Improving Nutrition Education Newsletters for the Food Stamp Eligible Audience	●									
Successes and challenges of using a peer Mentor model for nutrition education within a food pantry: a qualitative study	●									
Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods	●		●	●						

*Definitions for each of the types of intervention components are included in [Table 4](#).

Appendix III. Contents covered within the intervention components in each nutrition education program									
Study Title	Short Citation	Content of components*							
		Culturally responsive education	General nutrition guidance (USDA MyPlate, food labels, food groups)	Decision making (nudges, planning and shopping)/ food resource management	Maternal/pregnancy	Food safety	Client choice pantry	Stress management	Training for pantry volunteers
A Brief Community-Based Nutrition Education Intervention Combined With Food Baskets Can Increase Fruit and Vegetable Consumption Among Low-Income Latinos	Ko et al, 2017		●						
A formative evaluation in maternal and child health practice: the Partners for Life Nutrition Education Program for pregnant women	Boyd et al, 2003		●	●	●				
A mixed-methods evaluation using low-income adult Georgians' experience with a smartphone-based eLearning nutrition education programme	Stotz et al, 2018		●	●		●			
A Novel Food Pantry Program Food Security, Self-Sufficiency, and Diet-Quality Outcomes	Martin et al, 2013		●				●		
A Pilot Food Bank Intervention Featuring Diabetes-Appropriate Food Improved Glycemic Control Among Clients In Three States	Seligman et al, 2015		●						
A pilot food prescription program promotes produce intake and decreases food insecurity	Aiyer et al, 2019		●			●			
A Randomized Controlled Trial of a Community-Based Nutrition Education Program for Low-Income Parents	Dollahite et al, 2014		●	●	●			●	
A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women	Vander Wyst et al, 2019		●		●			●	
A video lesson series is effective in changing the dietary intakes and food-related behaviors of low-income homemakers	Cox et al, 2003		●	●					
About Eating: An Online Program With Evidence of Increased Food Resource Management Skills for Low-Income Women	Lohse et al, 2015		●						
Adaptation of a culturally relevant nutrition and physical activity program for low-income, Mexican-origin parents with young children	Kaiser et al, 2015		●						
An Outcome Evaluation of Food Pantries Implementing the More than Food Framework	Sanderson et al, 2020	●					●		
BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families	Olvera et al, 2010		●						
Changing the conversation about hunger: the process of developing Freshplace	Martin et al, 2012						●		
Comparison of a web-based vs in-person nutrition education program for low-income adults	Neuenschwander et al, 2013		●						
Cooking Matters for Adults Improves Food Resource Management Skills and Self-confidence Among Low-Income Participants	Pooler et al, 2017		●	●					
Digital photo receivers are a viable technology for nutrition education of low-income persons	Rifkin et al, 2006	●	●						
Effectiveness of a nutrition intervention with rural low-income women	Tessaro et al, 2007		●						
Effects of a nutrition education program for urban, low-income, older adults: a collaborative program among nurses and nursing students	Klinedinst et al, 2005		●						

Appendix III. Contents covered within the intervention components in each nutrition education program

Study Title	Short Citation	Content of components*							
		Culturally responsive education	General nutrition guidance (USDA MyPlate, food labels, food groups)	Decision making (nudges, planning and shopping/ food resource management)	Maternal/pregnancy	Food safety	Client choice pantry	Stress management	Training for pantry volunteers
Evaluating a food bank recipe-tasting program	Keller-Olaman et al, 2005		●						
Extending the Reach of Nutrition Education for Older Adults: Feasibility of a Train-the-Trainer Approach in Congregate Nutrition Sites	McClelland et al, 2002		●						
Farm2Fork: Use of the Health Belief Model to Increase Fresh Fruit and Vegetable Intake Among Food Pantry Participants	Wright et al, 2019		●	●					
Food Pantries Integrating Eating Competence, Interest/Enjoyment in Physical Activity and Self-Efficacy for Pantry Participants	Umoren et al, 2020		●					●	
Food Pantry Nutrition Education about Whole Grains and Self-Efficacy	Yao et al, 2013		●						
From Garden to Recipient: A Direct Approach to Nutrition Education	Murphy, 2013		●						
Healthy Choices for Every Body adult curriculum improves participants' food resource management skills and food safety practices.	Adedokun et al, 2018		●		●				
Highlighting healthy options in a food pantry setting a pilot study	Grabow et al, 2020		●						
Incorporating Nutrition Education Classes into Food Pantry Settings: Lessons Learned in Design and Implementation.	Hardison-Moody et al, 2015		●						
Indigenous message tailoring increases consumption of fresh vegetables by clients of community pantries	Clarke et al, 2011		●	●					
Intention to change nutrition-related behaviors in adult participants of a Supplemental Nutrition Assistance Program-Education	Savoie et al, 2015		●	●					
It just really clicked: participant-perceived outcomes of community nutrition education programs	Devine et al, 2006		●						
Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program	Taylor et al, 2000		●	●					
Learner-centered nutrition education improves folate intake and food-related behaviors in nonpregnant, low-income women of childbearing age	Cena et al, 2008		●						
Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial	Gans et al, 2018		●						
Nudging Urban Food Pantry Users in Utah Toward Healthier Choices	Coombs et al, 2020			●					
Nutrition Education Among Low-Income Older Adults: A Randomized Intervention Trial in Congregate Nutrition Sites	Mitchell et al, 2006		●						
Nutrition education via a touchscreen: a randomized controlled trial in Latino immigrant parents of infants and toddlers	Thompson et al, 2012		●		●				
Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women	Rustad et al, 2013		●	●					

Appendix III. Contents covered within the intervention components in each nutrition education program

Study Title	Short Citation	Content of components*							
		Culturally responsive education	General nutrition guidance (USDA MyPlate, food labels, food groups)	Decision making (nudges, planning and shopping/ food resource management)	Maternal/pregnancy	Food safety	Client choice pantry	Stress management	Training for pantry volunteers
Offering More Than Food: Outcomes and Lessons Learned from a Fresh Start food pantry in Texas	Martin et al, 2019	●					●		
Perceptions of nutrition education classes offered in conjunction with a community-supported agriculture intervention among low-income families	Lu et al, 2020		●						
Practice-based evidence of effectiveness in an integrated nutrition and parenting education intervention for low-income parents	Dickin et al, 2014		●						
Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants Related Behavior of Participants	Rubleee et al, 2019		●						
Results of a Pilot Intervention in Food Shelves to Improve Healthy Eating and Cooking Skills Among Adults Experiencing Food Insecurity	Caspi et al, 2017		●						
SNAP-Ed (Supplemental Nutrition Assistance Program–Education) increases long-term food security among Indiana households with children in a randomized controlled study.	Rivera et al, 2016		●			●			
Teaching nutrition education in adult learning centers: Linking literacy, health care, and the community	Murphy et al, 1996		●						
The Effect of Food Stamp Nutrition Education on the FoodInsecurity of Low-income Women Participants	Eicher-Miller et al, 2009		●	●		●			
The food stamp nutrition education program's (FSNEP) impact on selected food and nutrition behaviors among Texans	Anding et al, 2001		●	●		●			
The US Supplemental Nutrition Assistance Program–Education improves nutrition-related behaviors	Ryan-Ibarra et al, 2020		●	●					
Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries	Evans et al, 2010		●						●
Use of song as an effective teaching strategy for nutrition education in older adults	McClelland et al, 2015		●						
Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants	Jantz et al, 2002		●						
Using sensory science to evaluate consumer acceptance of recipes in a nutrition education intervention for limited resource populations	Moore et al, 2020		●	●					
Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial	Clarke et al, 2018		●	●					
Improving Nutrition Education Newsletters for the Food Stamp Eligible Audience	Harmon et al, 2007		●						
Successes and challenges of using a peer Mentor model for nutrition education within a food pantry: a qualitative study	Oliver et al, 2020		●						●
Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods	Stein et al, 2018		●	●					

*Definitions for the types of content of intervention components are included in [Table 4](#).

Appendix IV. Effectiveness of nutrition education programs based on six domains of measured outcomes for randomized controlled trials and quasi-experimental study designs included in review

Study Title	Short Citation	Study Design	Knowledge/beliefs about nutrition		Food resource management					Dietary quality								Food security status, Physical activity	Physical activity			
			nutrition knowledge	perceived barriers to change	self efficacy related to food	self-sufficiency related to food	use of foods provided within program	food resource management	food safety	selection of fruits, vegetables, whole grains	fruit consumption	vegetable consumption	fruit and vegetable consumption together	overall dietary behavior	overall diet quality	unhealthy foods	whole grain consumption			folate intake		
A formative evaluation in maternal and child health practice: the Partners for Life Nutrition Education Program for pregnant women	Boyd et al, 2003	Randomized Controlled Trial	++											++								
A Novel Food Pantry Program Food Security, Self-Sufficiency, and Diet-Quality Outcomes	Martin et al, 2013	Randomized Controlled Trial				++									++						++	
A Randomized Controlled Trial of a Community-Based Nutrition Education Program for Low-Income Parents	Dollahite et al, 2014	Randomized Controlled Trial							+	+				+							+	
A video lesson series is effective in changing the dietary intakes and food-related behaviors of low-income homemakers	Cox et al, 2003	Quasi-Experimental																				
About Eating: An Online Program With Evidence of Increased Food Resource Management Skills for Low-Income Women	Lohse et al, 2015	Randomized Controlled Trial							++													
Adaptation of a culturally relevant nutrition and physical activity program for low-income, Mexican-origin parents with young children	Kaiser et al, 2015	Cluster, Randomized Controlled Trial												+			+					+
BOUNCE: a community-based mother-daughter healthy lifestyle intervention for low-income Latino families	Olvera et al, 2010	Quasi-experimental												+								+
Changing the conversation about hunger: the process of developing Freshplace	Martin et al, 2012	Randomized Controlled Trial				+								++								++
Comparison of a web-based vs in-person nutrition education program for low-income adults	Neuenschwander et al, 2013	Randomized Controlled Trial							++	++					++							++

KEY	
++	Improvement in outcome variable, statistically significant at p<0.05.
+	Improvement in outcome variable, not statistically significant at p<0.05.
↔	No change in outcome variable.

Appendix IV. Effectiveness of nutrition education programs based on six domains of measured outcomes for randomized controlled trials and quasi-experimental study designs included in review

Study Title	Short Citation	Study Design	Knowledge/beliefs about nutrition		Food resource management					Dietary quality								Food security status, Physical activity	Physical activity	
			nutrition knowledge	perceived barriers to change	self efficacy related to food	self-sufficiency related to food	use of foods provided within program	food resource management	food safety	selection of fruits, vegetables, whole grains	fruit consumption	vegetable consumption	fruit and vegetable consumption together	overall dietary behavior	overall diet quality	unhealthy foods	whole grain consumption			folate intake
Cooking Matters for Adults Improves Food Resource Management Skills and Self-confidence Among Low-Income Participants	Pooler et al, 2017	Quasi-experimental						+											+	
Effectiveness of a nutrition intervention with rural low-income women	Tessaro et al, 2007	Randomized Controlled Trial	+	+									↔							
Food Pantry Nutrition Education about Whole Grains and Self-Efficacy	Yao et al, 2013	Quasi-experimental			+												+			
Healthy Choices for Every Body adult curriculum improves participants' food resource management skills and food safety practices.	Adedokun et al 2018	Quasi-experimental						+	+											
Highlighting healthy options in a food pantry setting a pilot study	Grabow et al, 2020	Quasi-experimental								+										
Indigenous message tailoring increases consumption of fresh vegetables by clients of community pantries	Clarke et al, 2011	Quasi-experimental					+					+								
Learner-centered nutrition education improves folate intake and food-related behaviors in nonpregnant, low-income women of childbearing age	Cena et al, 2008	Cluster, Randomized Controlled Trial	+																+	
Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial	Gans et al, 2018	Cluster, Randomized Controlled Trial											+							
Nutrition Education Among Low-Income Older Adults: A Randomized Intervention Trial in Congregate Nutrition Sites	Mitchell et al, 2006	Randomized Controlled Trial												+						
Nutrition education via a touchscreen: a randomized controlled trial in Latino immigrant parents of infants and toddlers	Thompson et al, 2012	Randomized Controlled Trial	+																	
Providing Nutrition Education at a Food Pantry Affects Food-Related Behavior of Participants Related Behavior of Participants	Rublee et al, 2019	Quasi-Experimental							+					+					+	

Appendix IV. Effectiveness of nutrition education programs based on six domains of measured outcomes for randomized controlled trials and quasi-experimental study designs included in review

Study Title	Short Citation	Study Design	Knowledge/beliefs about nutrition		Food resource management					Dietary quality								Food security status, Physical activity	Physical activity		
			nutrition knowledge	perceived barriers to change	self efficacy related to food	self-sufficiency related to food	use of foods provided within program	food resource management	food safety	selection of fruits, vegetables, whole grains	fruit consumption	vegetable consumption	fruit and vegetable consumption together	overall dietary behavior	overall diet quality	unhealthy foods	whole grain consumption			folate intake	
SNAP-Ed (Supplemental Nutrition Assistance Program-Education) increases long-term food security among Indiana households with children in a randomized controlled study.	Rivera et al, 2016	Randomized Controlled Trial																			
Teaching nutrition education in adult learning centers: Linking literacy, health care, and the community	Murphy et al, 1996	Quasi-Experimental																			
The Effect of Food Stamp Nutrition Education on the FoodInsecurity of Low-income Women Participants	Eicher-Miller et al, 2009	Randomized Controlled Trial																			
Training Volunteers to Run Information Technologies: A Case Study of Effectiveness at Community Food Pantries	Evans et al, 2010	Quasi-Experimental																			
Use of song as an effective teaching strategy for nutrition education in older adults	McClelland et al, 2015	Randomized Controlled Trial																			
Using computer-based assessments to evaluate interactive multimedia nutrition education among low-income predominantly Hispanic participants	Jantz et al, 2002	Quasi-Experimental																			
Mobile app increases vegetable-based preparations by low-income household cooks: a randomized controlled trial	Clarke et al, 2018	Randomized Controlled Trial																			
Ingredient bundles and recipe tastings in food pantries: a pilot study to increase the selection of healthy foods	Stein et al, 2018	Quasi-Experimental																			

* See Appendix I for additional information on effectiveness for all other study designs included in the review and on measurement and magnitude of change for each outcome variable within each of the 6 domains of all outcomes.



**NUTRITION EQUITY
& JUSTICE PARTNERS, LLC**

Directed by Lead Consultant, Angela Odoms-Young, PhD, Nutrition Equity and Justice Partners, LLC (NEJP) is a public health consulting group that works with government agencies, healthcare organizations, non-profit organizations, and businesses to identify transformative and equitable solutions to reduce the high burden of chronic disease and improve population health. NEJP provides technical assistance and training in program planning and evaluation, intervention design, measurement/survey development, food/nutrition security, obesity prevention, community engagement/community capacity-building, and the social and structural determinants of health. NEJP has worked with several national and local clients including Feeding America, the National Center for Chronic Disease Directors, Feeding Pennsylvania, National WIC Association, and Illinois Public Health Institute.



Feeding America® is the largest hunger-relief organization in the United States. Through a network of more than 200 food banks, 21 statewide food bank associations, and over 60,000 partner agencies, food pantries and meal programs, we helped provide 5.2 billion meals to tens of millions of people in need last year. Feeding America also supports programs that prevent food waste and improve food security among the people we serve; brings attention to the social and systemic barriers that contribute to food insecurity in our nation; and advocates for legislation that protects people from going hungry.

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